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VOLUME 127, No. 4 JULY 22, 1948

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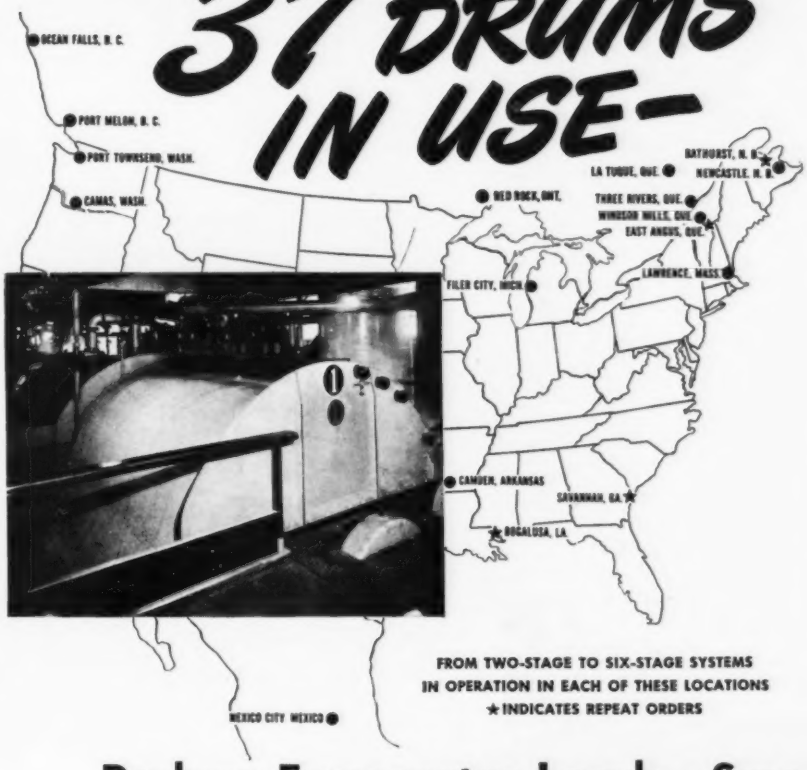

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JOSEPH P. HORGAN, *Secretary*

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E. P. MCGINN, *Industrial Editor*

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CALENDAR OF COMING EVENTS

ASSOCIATION EXECUTIVES: Please send us your meeting dates and locations for this column as far in advance as possible. No charge for publication.

AUGUST 16-17: TAPPI Plastics Conference. Institute of Paper Chemistry, Appleton, Wis.

AUGUST 17-20: TAPPI Fundamental Research on "Physical Constituents of Wood." Madison, Wis.

SEPTEMBER 8-10: Technical Section, Canadian Association. Harrison Hot Springs, B. C.

SEPTEMBER 27-29: TAPPI Mechanical Pulping Conference (Joint meeting with CPPA Technical Section) Poland Springs House, Poland Springs, Maine.

OCTOBER 11-14: TAPPI Testing Methods Conference at Mellon Institute, Pittsburgh, Pa. Headquarters, William Penn Hotel.

OCTOBER 25-28: Third Engineering Conference of the Pulp and Paper Industry Statler Hotel and Westinghouse Electric Co., Auditorium, Buffalo, N. Y.

Impco

Impco bleaching equipment for sulphite, sulphate, soda, groundwood and special fibres

Because Impco supplies all necessary handling equipment "from the time the pulp is cooked until it is ready for the beater room" it offers integrated layouts with a single responsibility on the supplier.

Paper TRADE JOURNAL

VOL. 127, NO. 4 REG. U.S. PAT. OFF. JULY 22, 1948

Brown Co., Recapitalization Rumors Evoke Speculations

TORONTO, Ont.—There has been no official announcement from the Brown Co., regarding recapitalization since the annual report, dated March 20, 1948, which stated: "The problem is difficult, in that it involves the necessity for a stock recapitalization—which is in the best interests of the preferred and common stockholders alike . . . directors are nearing a decision on the final plan for recapitalization, as well as on the time of submitting it to the stockholders. Our legal requirements prerequisite to the submission of the plan must, however, be met, and these consume time." However, Brown Co., shares have been the one bright spot on an otherwise dull market here for some time. Reports that an announcement regarding the long-awaited reorganization may be near, has stimulated interest in both the preferred and common shares of Brown Co.

Judging from the market reaction the latest rumored plans, whatever they are, will not be any too well received by investors. On July 15, Brown Co., six percent preferred was selling around $113 a share as against $115 a share about a week earlier, while Brown Co., common was about $4⅛ a share against $4⅞ a week earlier. The preferred stock has ranged from a high of $115½ on January 14, to a low of $78½ on March 16 this year. The common has ranged from a high of $6⅛ on January 5, to a low of $3⅜ on March 16.

Either of the rumored plans would give present holders of the $100 par six percent preferred, on which arrears totalled $51 a share at June 1, 1948, an equivalent total par value of new preferred stock, par $20 or $25 a share, on which the dividend would be equal to a five percent rate, together with 14 common shares.

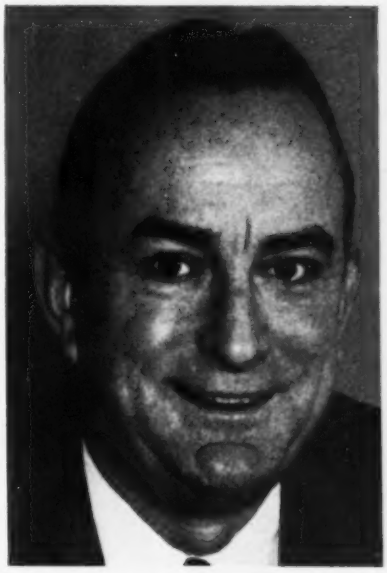
Preferred shareholders are pointing out that they would be taking a five percent rate on the new securities, against their present six percent rate: that they would be taking a security callable at $105.00 and giving up one callable at $153.50 ($102.50 plus $51.00 dividend arrears); and that the 14 shares of common stock would not cover the amount of preferred dividend arrears, should its price go much under current levels.

On the other side, common shareholders are against dilution of their equity through the issuance of the additional shares. The plan to give 14 common shares to each preferred holder would involve issuing 2,022,762 more common shares, which would more than double the number now outstanding (1,999,659 shares). As holders of two-thirds of the common shares would have to approve of the plan, it might be difficult to obtain the necessary approval. They also point out that control of the company would be sold for only about $7.4 millions by these plants.

(Continued on page 40)

Waste Paper Collections Lowest Since End of War

NEW YORK—Less waste paper was collected and sold to consuming mills during the week ended July 10 than during any single week since before the end of the war, Colley S. Baker,, director of the Eastern Conservatives Committee of The Waste Paper Consuming Industries said on July 15.



DAVID K. COLESBERRY

—newly appointed general sales manager of the Harrington & King Perforating Co., Chicago . . . Mr. Colesberry comes to Harrington & King after 22 years with the Sharples Corp., Philadelphia. The 65-year-old H. & K. firm has long been recognized as a leader in the perforating industry and in the pioneering of process applications and ornamental uses for perforated materials.

The reason given was that most of the waste paper packing plants and most of the mills were shut down over Independence Day, and a great many remained down for vacations and repairs to machinery and equipment. "At no time since before the war were as many plants idle as during that week," Mr. Baker said. "While some continued to be down the following week, mill operations generally were partly resumed.

"With the vacation season, except for a few mills, over, it may be expected that general dealer activity will be resumed at once, and that mill buyers will reappear in the market for quality packed waste paper of all grades. The resumption probably will be gradual during the next two weeks, but the first week in August should see both mill and dealer activity on a normal basis," Mr. Baker predicted.

"During the last five weeks the Eastern mills purchased four percent more waste paper than they consumed, and during the first 28 weeks of this year, which ended July 10, the mills had consumed approximately 3½ percent more waste paper than during the same period of last year and 20 percent more than 1946. Eastern collections were up 2 percent over last year and 15 percent over 1946 during the same 28 weeks. Mill inventories are gradually approaching last year's midsummer high."

13,000 pounds of meat were barbecued on these racks for employees and their families during the week of June 14-19 when International Paper Company's Springhill, Louisiana, mill celebrated the Fiftieth Anniversary of the Company. More than 14,000 guests went through the mill during the Open House week.

135,000 Attend Open Houses

NEW YORK—Upwards of 75,000 persons throughout the United States participated in the celebration of International Paper Co.'s 50th birthday party during the week of June 13-20, it was stated by the company, following tabulation of reports from its 31 mills and plants.

The simultaneous celebration consisted of community-wide open house programs by 20 mills and plants. Eleven other plants of the company in the Northeast, mid-west and far west, held special parties for employes and selected guests. At the same time, it was reported that nearly 60,000 visitors toured ten mills and plants of Canadian International Paper Co., New Brunswick International Paper Co. and affiliated companies.

Chief feature of each of the programs in both the U. S., and Canada was the awarding of medallions to employes who have been with the company for 25 years or more.

According to official mill figures, 14,900 guests visited the mill at Panama City, Fla., including special visitors from Cuba, the Philippine Islands and England.

Readying Tariff Summaries

WASHINGTON — The U. S. Tariff Commission is preparing summaries of tariff information on wood, paper, chemicals, and other products, bringing up to date the status of these commodities under present tariff agreements.

Summaries on all dutiable items are being revised to show latest tariff changes. The summaries will show rates of duty under previous tariff acts, rates in effect January 1, 1945, and the 1948 rate.

The Commission has released some compilations, including flax, hemp, jute and manufactures, among others.

New England Truckers Seek Rate Boost

HOLYOKE, Mass.—Paper manufacturers here learned on July 14 that a special session of New England truckmen has been scheduled to be held at Providence, R. I., on the 20 to discuss a boost of approximately 15 percent in trucking rates.

The increase, said Samuel F. Derby, president of the New England Motor Freight Bureau, is necessary to stabilize the industry.

Most of the trucking firms in this area are reported to be members of the New England Motor Rate Bureau, Inc., and the Eastern Motor Freight Conference. Directors of both have been carrying on discussions regarding the financial position of the carriers.

Permission of the Interstate Commerce Commission will have to be secured before interstate rates can be increased. Increases within the state would have to be approved by the State Department of Public Utilities.

Paper Supersedes Burlap, Tariff Commission Says

WASHINGTON — Burlap and some other jute fabrics may never regain some of their pre-war markets, lost to cheaper paper wrappings, the U. S. Tariff Commission reports.

Surveying tariff changes since the general trade agreements signed at Geneva became operative, the Commission commented on burlap and certain other jute fabrics:

"The use of paper in containers and wrapping materials at the expense of both burlap and cotton fabrics has been increasing.

"Containers of corrugated cardboard or wood, as well as bulk shipments are also competitive factors in some instances. During World War II, burlap was replaced by paper and by cotton fabric in a great many uses.

"Since the war it has regained most of its former market in bag manufacture, but in wrapping material the recovery has been much slower and perhaps some of the market lost to the lower-cost wrappings of paper may never be regained."

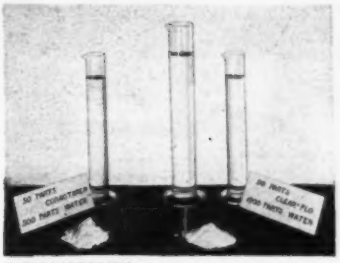
The Commission is releasing periodically, comparative studies of old and new tariff rates in various commodities, of which manufactures of flax, hemp, jute, etc., are one subject.

Monty Woolley, bearded actor of "The Man Who Came to Dinner," also came to the Open House at International Paper Co's Hudson River mill in Palmer, New York, during the week of June 13-20. Pictured from left to right are Mr. Woolley, O. B. Beyer, manager of the Hudson River mill, and Clarence Knapp, author.

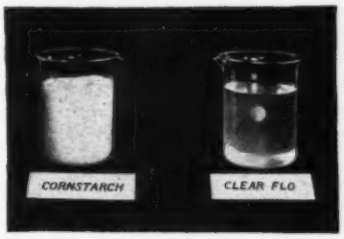
NEW! CLEAR FLO

STARCHES 'H' and 'L'

(High Viscosity) (Low Viscosity)



HIGH VISCOSITY. CLEAR FLO 'H' starch takes three times as much water as ordinary corn starch to give comparable viscosities.



CLARITY. CLEAR FLO starches are practically transparent while ordinary corn starch assumes a milky white opaqueness.

STABILITY. CLEAR FLO starches still pour readily from the beaker seventy-two hours after being cooked while ordinary corn starch has firmly jelled.

CLEAR FLO starch is the sodium salt of an ungelatinized, low substituted starch acid-ester derivative containing carboxylic and sulphonic acid groups. The great hydrating capacity of these groups results in starches with unique properties not found in ordinary starches plus the characteristics of some of the natural gums. Gelatinization of CLEAR FLO starches takes place with extreme sharpness and at considerably lower temperatures than with ordinary starches.

SWELLING TEMPERATURES AND RATES OF SWELLING. Taking the temperatures at which a 25% aqueous suspension of starch begins to show a measurable increase in viscosity as the gelatinization temperature, the figures below show the relatively low gelatinization temperatures of CLEAR FLO starches in comparison with ordinary starches.

CLEAR FLO 'H'	113 — 129°F
CLEAR FLO 'L'	113 — 129°F
Corn Starch	149 — 151°F
Tapioca	143 — 145°F

When cooked in a boiling bath, the gelatinization of CLEAR FLO starches takes place very sharply with the peak viscosity being reached almost immediately after the swelling of the starch begins. As with other starches, the temperature at which the viscosity increase is noted varies with the concentration, rate of heating and type of agitation.

SOLUTION VISCOSITIES

	% Concentration of Dry Starch	Solution Viscosity in Centipoises after 15' at 92° C
CLEAR FLO 'H'	2	420 Approx.
CLEAR FLO 'L'	10	440 "
Corn Starch	5	460 "
Tapioca	4	510 "

POSSIBLE APPLICATIONS. We're ready to match our research and laboratory efforts with yours in further exploration of CLEAR FLO starches in Laundry Starches, Desensitizing gums in Lithography, Cosmetics, Paper Sizing, Boiler Feed Water Compounds to Prevent Scale Formation, Dispersion of Pigments for Wet Grinding, Textile Finishing and Sizing, Low Temperature Swelling Binder for Wall Board, Gypsum, Doll Heads, Asbestos, Briquettes, etc., Cleaning Compounds, Water Colors and Paints, Wall Paper and Poster Pastes.

Address: National Starch Products, Research and Development Laboratories, 270 Madison Avenue, New York City. Plants: Dunellen, N. J., Chicago, Indianapolis and San Francisco. In Canada: Meredith, Simmons & Co., Ltd., Toronto and Montreal. In Holland: Nationale Zetmeelindustrie, N. V. Veendam.

National STARCH PRODUCTS

STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

Imports and Exports, May, 1948

Paper, Paperboard and Paper Products

WASHINGTON—United States imports of paper, paperboard, and paper products in May, 1948, totaled 384,113 tons, the Department of Commerce reported on July 14 through its Office of International Trade.

Imports were 17,321 tons above the April 1948 level, the increase being principally due to the gain in imports of newsprint, and were also 38,581 tons above those in May, 1947. Of total imports in this group during May, paper (principally newsprint) represented 377,823 tons, paperboard 5,802 tons, and paper products 488 tons, according to the Forest Products Branch.

Newsprint imports during May, amounting to 368,133 tons, were 18,484 tons above those in April and 39,386 tons above the May 1947 imports.

May 1948 imports of pulpwood were 44,110 cords more than the April total while wood pulp imports registered a gain of 34,949 tons in similar comparison.

May 1948 exports of paper, paperboard, and paper products totaled 32,775 tons, a decrease of 2,076 tons from those in April 1948, and a loss of 8,622 tons over May of last year.

Of total exports in this group during May, paper amounted to 13,579 tons, paperboard 10,109 tons, and paper products 9,087 tons.

Newsprint exports in May, totaling 1,800 tons, were 1,204 tons below those in April.

May exports of wood pulp amounted to 9,326 tons, a gain of 2,930 tons from the total for the previous month.

The accompanying tables show the United States foreign trade in pulpwood, wood pulp, paper, paperboard, and paper products for May and April 1948.

UNITED STATES IMPORTS

Pulpwood, Wood Pulp, Paper, Paperboard and Paper Products

May and April, 1948

(Short tons, except where otherwise indicated)

Item	*May*	*April*
Pulpwood, total (in cords of 128 cu. ft.)	135,261	91,151
Rough	60,633	29,921
Peeled	65,618	53,184
Rossed	193	17
Chipped	8,817	8,029
Wood pulp, total	205,959	171,010
Bleached sulphite, rayon and special chemical grades	21,810	17,636
Bleached sulphite, other	28,764	25,866
Unbleached sulphite	65,993	50,537
Bleached sulphate	27,089	18,420
Unbleached sulphate	31,470	26,148
Soda pulp	1,795	1,674
Chemical screenings	746	873
Bleached mechanical groundwood	——	——
Unbleached mechanical groundwood	27,864	29,532
Mechanical groundwood screenings	428	324
Waste fibrous materials, total	8,293*	7,873
Rags for paper stock	1,934	1,686
Other pulp—rag, straw, esparto, etc.	——	——
Other waste fibrous materials	6,359*	6,187
Paper, paperboard and paper products, total	384,113*	366,792
Paper and paperboard, total	383,625*	366,300
Paper, total	377,823*	359,078
Newsprint	368,133	349,649
Printing, and book paper uncoated	7,409	7,058
Fine paper, total	60*	32
Writing paper	13*	6
Cover paper	1	(1)
Bristols	1	——
Thin paper	41*	22
Other fine paper	4*	4
Wrapping, bag, and converting paper, total	2,007*	2,078
Greaseproof	(1)	4
Vegetable parchment	2	4
Kraft wrapping	1,188	1,005
Wrapping, except kraft	817*	1,065
Tissue paper	181*	207
Absorbent paper	2	3
Building paper	31*	51
Paperboard, total	5,802*	7,222
Kraft container board	——	——
Other container and boxboard	——	——
Other paperboard	3,364*	4,349
Fiber insulation board	——	——
Wallboard	2,438*	2,873
Paper products, total	488	492

UNITED STATES EXPORTS

Pulpwood (in cords of 128 cu. ft.)	——	80
Wood pulp, total	9,326	6,396
Bleached sulphite, rayon and special chemical grades	1,868	1,110
Bleached sulphite, other	1,098	1,563
Unbleached sulphite	5,579	3,596
Bleached sulphate	49	40
Unbleached sulphate	500	——
Soda pulp	——	——
Screenings and other wood pulp	232	87
Waste Fibrous materials, total	17,257	12,352
Overissue news	3,095	1,820
Other waste paper, including old newspapers	11,773	9,411
Rags for paper stock; valued at $50 or over per ton	430	579
Rags for paper stock; valued under $50 per ton	922	490
Other paper stock	1,037	52
Paper, paperboard and paper products, total	32,775*	34,851
Paper and paperboard, total	23,688*	24,659
Paper, total	13,579	16,169
Newsprint	1,800	3,004
Book paper, uncoated	3,831	4,406
Fine paper, total	4,220	4,203
Writing paper	2,572	2,806
Cover paper	62	74
Bristols	743	630
Cigarette paper	843	693
Wrapping, bag, and converting paper, total	2,543	3,136
Greaseproof and waterproof paper	819	1,057
Wrapping, except kraft,	822	1,082
Kraft wrapping	902	99;
Tissue and crepe paper	338	65
Blotting paper	193	16;
Sheathing and building paper	654	60.
Paperboard, total	10,109*	8,49(
Kraft container board	3,868	1,566
Other container and boxboard	688	794
Other paperboard	2,285	2,350
Fiber insulation board	1,377	1,852
Wallboard	1,891*	1,728
Paper products, total	9,087	10,192
Surface-coated paper	855	1,418
Toilet paper	461	863
Paper towels and napkins	145	160
Filing folders, index cards, and other office forms	153	236
Papeteries	3	8
Wallpaper	3	3
Shipping sacks	1,967	1,542
Paper bags	612	576
Shipping containers	1,324	1,246
Boxes and cartons	481	356
Envelopes	92	92
Cash register and adding machine paper	78	336
Other paper and paper products	2,913	3,356

1—Less than one-half ton.

* Revised; subject to further revision.

Source: Prepared in the Forest Products Branch, Office of International Trade. Data from Bureau of the Census, U. S. Department of Commerce. Figures are preliminary; subject to revision.

Superintendents To Meet At Lake Placid, Sept. 23-25

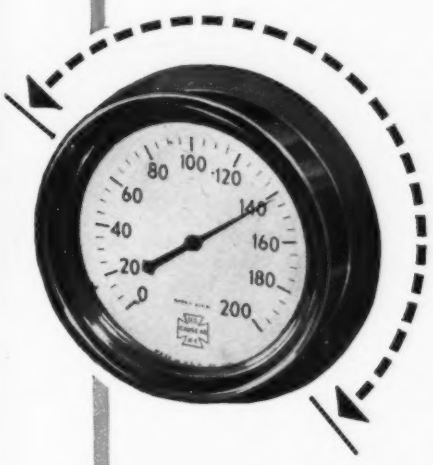
ALBANY, N. Y.—Plans for a convention to be held at Lake Placid, Sept. 23-25, were drafted at a meeting of the New York-Canadian Division, American Pulp & Paper Mill Superintendents' Ass'n., in the De Witt Clinton Hotel. John D. Kane of Rochester conducted the meeting. Reports were submitted by Edward J. Thom, Montreal; J. O. Julson, Plattsburgh; John H. Treadwell, Watertown; and Henry A. Horstmann, Syracuse. More than 300 superintendents are expected to attend the convention.

Bag and Paper Distr's., Outing, August 12

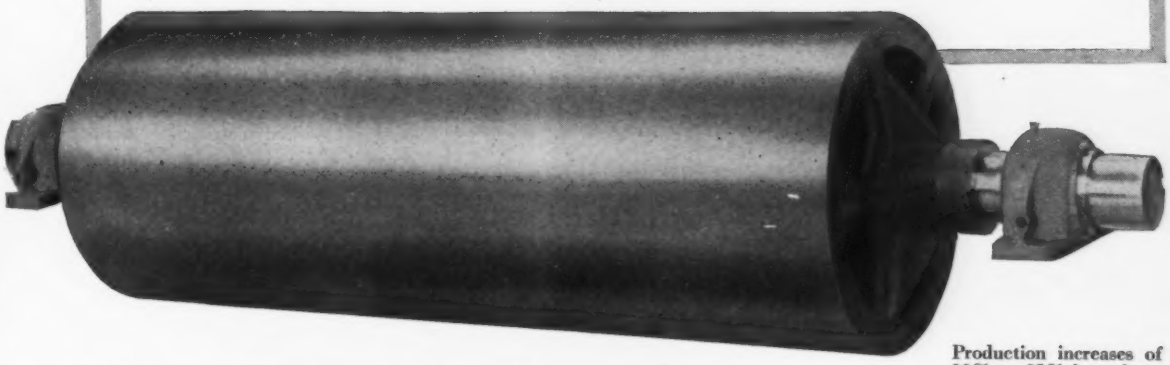
NEW YORK — Metropolitan Bag & Paper Distributors Ass'n., Inc., will hold its 31st annual outing at Cold Springs (L.I.) Country Club on August 12. Golf, tennis, baseball, indoor sports, swimming, luncheon and dinner are programmed. Louis Silfen, president of the Association, is chairman of the outing committee. Other committeemen are: Charles W. Beinbrink, Samuel Hayward, Arnold W. Moller, Michael Posner, Theodore Puchkoff, and Arthur H. Stein.

Right Days—Wrong Year

In reporting the annual meeting of the American Society for Testing Materials in the July 8 issue, page 22, column one, third line from bottom, the year should have been stated as 1948, not 1949.



safely CAN YOU WORK YOUR DRIER ROLLS AT Higher Steam Pressures?



Production increases of 10% to 25% have been reported after Lukenweld Jacketed Drier Rolls replaced drum-type rolls.

High pressures, possible with Lukenweld Rolls, boost output

First question to ask is, "Can our old rolls be *safely* worked at higher pressures?" Some operators report unfortunate experiences when they tried; failure of rolls damaged other rolls and shut down entire machines. Often the insurance companies will not permit any increase in pressure.

Lukenweld Drier Rolls are predictable, because they are steel plate construction. Designed for pressure work—as much as 350 psi. and over—they are SAFE. Ask your insurance company what they know about Lukenweld Drier Rolls.

Positive removal of condensate and the higher steam velocity obtained with Lukenweld Jacketed Drier Rolls make them better workers at any steam pressure. Reduction of film, dead steam, entrapped air or other noncondensable gases contributes to their high efficiency. Temperatures are more even across roll faces.

Lukenweld Jacketed Drier Rolls are offered in diameters from two feet to over twenty feet. They are described in Bulletin 358. For a copy, write Lukenweld, Division of Lukens Steel Company, 403 Lukens Bldg., Coatesville, Pa.

LUKENS
LUKENWELD DIVISION

LUKENWELD
DRIER ROLLS AND DRYING MACHINERY

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •

Unlocking Tree World Mysteries

STAMFORD, Conn.—Attempting to unlock one of the long-standing mysteries of the tree world, the Bartlett Tree Research Laboratories disclosed on July 13 their discovery of a fungus believed to be the cause of a blight of forest and ornamental pine trees.

The theory was advanced by Dr. Rush P. Marshall, director and chief pathologist of the laboratories, who directed that research be begun at once looking toward control of the disease.

Determining the cause of the disease, plus its control, will mean an important economic saving in plantations of pines throughout the country.

The blight attacks white pines principally. It stunts growth. The tree yellows, and the tips of the needles turn brown. The tree becomes progressively weakened until death takes over.

Thousands of pines in plantation plantings have been affected, resulting in decreased yields.

For years the blight has baffled scientists. Cause of the disease was unknown. It had been variously attributed to a deficient root system or a needle blight that had become chronic.

Last Fall, Dr. Marshall reported in a scientific bulletin published early this month by the laboratories, that a greater outbreak than ever was evidenced throughout northeastern America. One of the puzzling characteristics of the disease was its spotty distribution. Normal and diseased pines grew side by side.

Intensive tests were made under Dr. Marshall's direction. Field observations were made of the root condition of many of the affected pines in an effort to determine whether damage might have been due to injury by mice, lowering of the water table, wet feet, deep planting or attacks by weevils.

One by one these were ruled out. Tests were made then to determine whether the condition was due to noxious fumes, seepage from road oil or common salt. None of these was found to be the casual factor.

"Long experience also showed that affected trees would not respond well to feeding or other normally restorative procedures," said Dr. Marshall.

Last December Dr. Marshall discovered a white to buff colored fungus growth at the ground line in a group of blighted pines at Darien, Conn. The long thread-like mycelium of the fungus growth extended into the root system of the diseased trees.

"White rot of the roots was evident," Dr. Marshall said. "Numerous feeding roots were being destroyed." The fungus was identified by the division of forest pathology of the U.S. Department of Agriculture at Beltsville, Md., as corticium galactinum.

Continued investigation by Dr. Marshall proved the same fungus attacked roots of other blighted pines in southwestern Connecticut, southeastern New York, and that it was present as far south as Wilmington, Del., and west to Chambersburg, Pa. While it was found frequently under white pines, the fungus appeared occasionally in red and other pines.

Simple empirical tests were begun at once at the laboratories in the hope of finding remedical treatment through liming, fertilizing and fungicidal treatment.

But Dr. Marshall said "the problem of finding the proper control of this white root rot disease—now that we have established its cause—is of such importance that we are asking a selected university to accept a graduate fellowship to undertake further research." The name of the university and the research fellow will be announced soon.

Power Costs Up, Sales Down

MADISON, Wis. — The Wisconsin Public Service Corp. is seeking a rate increase. C. E. Kohlhepp, Milwaukee, corporation president, states that net income, including that of the Menominee & Marinette Light & Traction Co., a subsidiary, was only $552,468.64 during the first five months of 1948, compared to $956,884.81 for the corresponding period of 1947, a reduction of 42 percent. The company serves many paper mills along the river.

"Plentiful rainfall would do a great deal to improve the corporation's financial situation," Mr. Kohlhepp declared. He added that it is improbable that the other greatly increased costs can be met with the present rates which are still below pre-war levels.

Business Census Suggestions Welcomed by Government

WASHINGTON — W. C. Truppner, chief of the Business Division of the Bureau of the Census, is seeking recommendations to improve the "Census of Business — Wholesale Trade" in which information concerning paper merchant operations is included.

In an appeal made on July 16, Mr. Truppner said: "The recommendations of your organization, or any affiliated groups, with reference to the various phases of the census will be appreciated. As the final determination on content of the census questionnaires must be made early in August, recommendations should be received as soon as possible before that time.

FPC Authorizes Power Acquisitions

BOSTON, Mass.—The Federal Power Commission in Washington has authorized the New England Power Co., of Boston to acquire all of the operating facilities of Bellows Falls Hydro-Electric Corp., and certain of those owned by the Connecticut River Power Co.

The company said it proposed to acquire the Bellows Falls facilities through payment of $8,751,625.41, and assumption of $52,120.21 in obligations.

The Connecticut company's facilities were to be acquired for payment of $533,960.05, the company said. Financing was proposed through an $11,000,000 bond issue.

The three companies jointly held a license for a project including a dam and power house with installed capacity of 57,571 horse-power at Bellows Falls, Vt., and transmission-line facilities in Vermont, New Hampshire and Massachusetts. New England Power and the Connecticut Co., owned only parts of the transmission line extending to Pratt's Junction, Mass.

Bellows Falls also held a 1944 license for a dam, canal and two powerhouses with installed capacity of 7,250 horsepower, with an amended license for ultimate installed capacity of 44,000 horsepower.

The commission also approved a proposal by New England Power to eliminate $7,040,315.63 of excess of original costs from its electric plant accounts through charges for depreciation, capital surplus and earned surplus.

Ontario O-K's St. Lawrence Project

BOSTON, Mass.—The Ontario, Canada, Hydro-Electric Power Commission has received the permission of the Ontario government to proceed with plans for construction of the $428,000,000 St. Lawrence River power project in cooperation with New York State.

Commission officials said they would apply to the International Joint Power Commission for final permission to begin the project, which will take seven years to complete. They said Ontario and New York State will split the cost of the two million horsepower project.

The power project will be constructed between Prescott and Cornwall, Ontario, and will flood 11,360 acres in Ontario and 11,330 acres in New York. Two Ontario towns, Morrisburg and Iroquois, will be abandoned, the commission said.

Pulpwood Rate Boost Unsatisfactory to Carriers

RALEIGH, N. C.—The recent increase of approximately 20 percent in pulpwood rates allowed by the State Utilities Commission was not satisfactory to the Seaboard Air Line and Atlantic Coast Line Railroads, so the two railroads on July 16 filed assignments of error with the commission.

Indianapolis Merchants Meeting At Severin, Noon, July 28

INDIANAPOLIS — The Indianapolis Fine and Wrapping Paper Merchants will hold a luncheon meeting at Hotel Severin at 12:00 noon, July 28.

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A reproduction of this incident from the fabulous life of Paul Bunyan—the thirty-second of a series—will be sent on request. It will contain no advertising.

Structural Changes Slow Paper Plant Construction

LONGVIEW, Wash. — Contemplated structural changes in the planned newsprint mill at the Pacific Paperboard Co. site caused cessation of work on the construction project on June 28, Lloyd G. Frost, project manager for the Collins, Swinerton & Wallberg Co., San Francisco contractors, said on July 1.

Approximately 150 workmen were laid off when work was stopped but supervisory and office personnel employed by the contracting firm at the site is being retained.

Frost said the contractors do not know what the structural changes are —that the engineering firm, Moore & Co., of San Bernardino, Calif., which designed the plant, is studying them.

"Until they decide just what changes can be made," he said, "we thought it wise to stop work entirely. Alteration in plans will affect our suppliers, and we have had to postpone production of structural parts. Fabrication of steel structures is an example. The changes may delay the work several months, or not so long, depending upon how much time is required to change our construction schedule or for our suppliers to set up production schedules for different items than previously ordered or contemplated."

However, he emphasized, "My feeling is that definitely we will go ahead and complete a newsprint mill on this site."

Frost said, "There has been no thought at all of lack of financing as a reason for the stoppage. So far as we know an association of California newspapers intends to continue the project."

Designers and engineers for Moore & Co. were recalled from Longview to San Francisco for purposes of coordinating the plans and incorporating the changes, when decided upon, in the designs they had made on the site here, according to Mr. Frost.

Assessment Hike Starts Chain Reaction

NEKOOSA, Wis. — Nekoosa-Edwards Paper Co's. protest against a $1,000,000 increase in the assessment of its property in this city possibly may result in a state reassessment of all Nekoosa property. The board of review on July 15 decided to let stand the assessor's estimates of the firm's real estate values.

Nepco's property was assessed at $3,700,000 in 1947 and $4,700,000 in 1948. Extensive testimony was offered at the board's hearing by C. A. Jasperson, Nepco secretary, and Alex J. Stolle, Nekoosa assessor. Also appearing was S. E. Casey, company counsel. Mr. Jasperson said the increase was "out of line" with the assessed values of other real estate. Mr. Stolle said improvements totaling about $1,890,000 had "increased the rated value and productive efficiency of the paper company." He listed the new bleach plant at $450,000; blast furnace at $100,000; steam turbines at $150,000; precipitator and equipment at $125,000; filtering plant building and equipment at $50,000; wet room completed eight years ago ("valuation never completed in assessor's mind," he said) $400,000; new shipping and finishing-room building with full, new equipment $500,000; extensive improvements on No. 4 paper machine $50,000; machine sheds with paper and equipment, including three new trucks $25,000; new locker room and equipment $40,000.

Mr. Jasperson said some of these items had been listed in previous assessments and that he was asking only that the mill be valued on the same basis as the rest of Nekoosa, contending that some property was assessed at not over 50 percent of the 1942 or 1943 sales value.

Mayor Vernon Ruder, serving as chairman of the board of review, said that if the assessor went off of the 50 percent basis the only solution would be a reassessment.

GEORGE W. SMITH, JR.

—elected president of the De Laval Steam Turbine Co., Trenton, N. J., succeeding H. L. Watson, who has retired after 35 years of active service . . . Before becoming associated with De Laval in 1947 as assistant to the president, Mr. Smith served successfully as vice-president and director of the White Motor Co.; as works manager and a member of the executive committee of the Victor Talking Machine Co. (now Victor Division of RCA); as manager of two divisions of the Bendix Aviation Corp.; as a director of the Ohio Crank Shaft Co., and as chief engineer of the Naval Aircraft plant at the Philadelphia Navy Yard. More recently he has been engaged in industrial engineering consulting services as the senior member of the New York firm of Smith & Wood, Inc. . . . Mr. Watson, who directed the affairs of the company as executive vice-president from 1935 to 1942 and as president since 1942, will continue as a director and chairman of the executive committee.

Halifax Starts Kamyr Wet Machine

ROANOKE RAPIDS, N. C.—A milestone in the history of the local kraft paper plant of the Halifax Paper Co., Inc., was observed this week when a new Kamyr wet machine went into full operation. This machine, the second of its type in the mill, increases pulp production from 200 to 300 tons per day.

Installation of the new Kamyr machine is part of a program of major improvements and modernization at the paper company plant costing well over a million dollars. Construction is being handled by C. M. Guest & Sons, contractors, of Anderson, S. C., and Greensboro, N. C., with planning by the engineering firm of J. E. Sirrine Co., of Greenville, S. C.

In addition to the Kamyr machine, other improvements being put in by the Guest company include a Combustion Engineering Co. recovery unit. Washing and screening facilities are also being revamped. It is estimated that the entire program will take a year to complete.

The Halifax Paper Co. plant, located on the Roanoke River, is a wholly owned subsidiary of the Albemarle Paper Co., of Richmond, Va.

David C. Knowlton Heads Knowlton Bros., Inc.

WATERTOWN, N. Y. — David C. Knowlton has been elected president of Knowlton Brothers, Inc., succeeding his father, Theodore Ely Knowlton, who was elected chairman of the board of directors. As chairman of the board, T. E. Knowlton succeeds his half-brother, the late G. Seymour Knowlton, who was the head of the board until his death Dec. 14, 1947.

Theodore Ely Knowlton has been president of the corporation since Nov. 5, 1938, when G. Seymour Knowlton was made chairman of the board. The two changes in the executive offices of the company result from G. Seymour Knowlton's death.

Other officers elected at the recent directors' meeting are: Robert W. McCormick, vice president; James C. McCormick, treasurer, and E. Way Clarke, secretary.

The new president of the corporation, is the only son of Mr. and Mrs. T. E. Knowlton. Upon graduation from Princeton University in 1931 he came to the mill, serving first in the beater room. In 1941 he became secretary of the corporation and in 1944 vice-president.

Phoenix Plant Burned

PHOENIX, N. Y.—The Phoenix Paper Mfg. Co., Inc., plant was destroyed by fire on July 14. Company officials said the blaze started inside the building behind some drying machines. The cause was not known.

The company also operates a plant for the manufacture of toilet tissue. That building was not damaged.

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Jessup & Moore Paper Co. Control In New Hands

PHILADELPHIA—The *New York Post,* for the past year and one-half in control of the capital stock of the Jessup & Moore Paper Co., has sold its interests to the Knickerbocker Printing Corp. of New York. All executives and officers of the Jessup & Moore Co. have resigned. They include T. A. Thackery, president; Joseph E. Plumstead and S. B. De Farges, vice-presidents; Marvin Berger, secretary; and L. H. Cook, treasurer.

The new officers and directors are understood to be made up mainly of persons closely affiliated with the Knickerbocker Printing Corp. John H. Brewer, formerly with the Carter, Rice & Co., Corp., of Boston, is taking over the office of vice-president and general manager, in complete charge of manufacture and sales.

Practically the entire personnel of the general offices of the Jessup & Moore Co. in Philadelphia were summarily notified on July 16 that the Philadelphia office would be closed on July 31 and that all salaries and services would end on that date.

Finch, Pruyn & Co. Personnel Realignment

GLENS FALLS, N. Y.—Fred B. Chapman retired as treasurer of Finch, Pruyn & Co., Inc., on July 1 after nearly 50 years of service with the firm and its predecessor. He expects to continue as a director of the company. George F. Hoy has been elected to succeed Mr. Chapman as treasurer and Elmer S. White, former cashier, has been named assistant treasurer to succeed Mr. Hoy.

Lyman A. Beeman, a vice-president, will direct the management of the retail department which Mr. Chapman directed since 1930.

Finch, Pruyn & Co., a partnership, was one of four concerns consolidated in 1904 under the name of Finch, Pruyn & Co., Inc., the others were the Glens Falls Co., Glens Falls Co. Mill, and the Associated Lime Cos. The paper mills were constructed during 1904 and the firm has expanded until today it not only manufactures paper and sells building material but also handles many other lines of merchandise.

Pension Plan Winning Widespread Approval

CUMBERLAND, Md. — More than 97 percent of the employes in four of the company's six plants who are eligible have signed up for membership in the West Virginia Pulp & Paper Co. pension plan for hourly paid workers, the Luke plant management notified its employes by letter on July 2.

The company informed workers that as of June 25 enrollment in the plan included almost 99 percent of eligible employes at the Tyrone, Pa., plant; 97 percent at Williamsburg, Pa.; almost 97 percent at Mechanicville, N. Y.; and more than 95 percent at Charleston, S. C.

The number at Luke, Md., was 61 percent when the letter was drafted, but, the company reports, has increased to 62 percent and is growing. Covington, Va., trailed with 31 percent.

Employes have until September 1 to sign up for the plan without loss of past service benefits accrued before the plan went in on June 1.

C-Z Honors Bruner

OREGON CITY, Ore.—Fifty years of service in the Crown Zellerbach organization won special honors on June 29 for Clarence Bruner, former resident manager of the West Linn plant but now management consultant, when the 50-year pin was presented to him in San Francisco at a special session of corporate officers and several old-time associates. The presentation was made by Louis Bloch, chairman of the board, himself a 54-year veteran of the company.

Following the presentation, Mr. Bruner was honor guest at a luncheon given by Crown Zellerbach officials at the San Francisco Stock Exchange club, and Mrs. Bruner was entertained by wives of corporate officials at a luncheon party in the Palm Court of the Palace Hotel.

A message of congratulation was sent to Mr. Bruner by all officials and workers at the West Linn mill.

Salt Cake Freight Hike Hanging Fire

WASHINGTON—The Interstate Commerce Commission has suspended, pending further notice, proposed increased surcharges on various commodities shipped from Western trunkline territory.

The action is believed to have halted certain rate changes which would have affected salt cake from western producing points eastward, on which major producers had asked I.C.C. for further consideration.

No new hearing dates have been set.

Two Northwesterners Join Western SAPIs

CHICAGO — Recently admitted to membership in the Salesmen's Ass'n. of the Paper Industry (Western Division), are Bernard W. McEachern and Orlo F. Brower. Mr. McEachern was recently made vice-president and sales manager of the Northwest Paper Co., Cloquet, Minn. Mr. Brower is connected with the Chicago office of the same firm.

Sa'esmen's Ass'n. Go!fing At Wingfoot, August 19

NEW YORK—Wingfoot Country Club has been chosen as the site, and August 19 the date, of the next eastern golf outing of the Salesmen's Ass'n. of the Paper Industry (Eastern Division).

Robert Driscoll Joins International Paper Co.

LEE, Mass.—Robert Driscoll, former superintendent of the Niagara mill of Smith Paper, Inc., of Lee, has accepted the superintendency of the Niagara Mill of the International Paper Co., in Niagara Falls, N. Y., it was disclosed on July 12.

In his new position, Mr. Driscoll will have charge of the light-weight division of International Paper. He has been employed by Smith Paper, Inc., for the last 28 years, and at the time of his resignation last spring, had been superintendent of the Niagara Mill for about three years.

Mr. Driscoll's family has been associated with Smith Paper for many years. Edward Driscol, his father, was superintendent of the Valley Mill, while a brother, Richard F. Driscoll, is superintendent of the Columbia Mill. Another brother, Daniel Driscoll, was superintendent of Smith Paper's fibre division in Red Lake Falls, Minn., until its recent closing.

Consolidated Rebuilding Its No. 3 Paper Machine

WISCONSIN RAPIDS, Wis. — Consolidated Water Power & Paper Co. is rebuilding its No. 3 paper machine which has been operating for 33 years. The company expected the machine at the local mill to be back in operation by July 20. The machine, built in 1915 from spare equipment left over from changes made in other machines, is the company's only cylinder machine, the others being of the Fourdrinier type. The rebuilding project includes replacement of the wooden drier frames with cast iron and the driers are being raised five feet above floor level, four feet higher than previously. More driers are being added and a new hood and ventilating system and a new drainage system are being installed.

The bulk of No. 3's production is container board, used by Ahdawagam Paper Products Co. and other manufacturers of shipping containers.

Processor Enjoined

HARTFORD, Conn.—Judge J. Joseph Smith of the U. S. District Court at Hartford on July 9 enjoined a Middletown processor of waste paper, Maurice Leitzes, from violation of the wage and hour law.

The defendant, who does business as the Connecticut Waste & Baling Company of Portland, is enjoined from failure to pay time and one-half for overtime, failure to keep proper records required by law, and from shipment in interstate commerce of waste paper processed by underpaid employes.

Leitzes was also ordered to make restitution to employes for past failure to pay time and one-half. Regional Attorney George R. Foley of the Department of Labor said the case had been set down for hearing, but that Leitzes decided to agree to the court order.

SEED TREE

PLEASE DO NOT CUT!

In the fall of 1941, the Weyerhaeuser Timber Company established the first officially designated "Tree Farm" near Alma and Montesano, Washington. To honor Charles H. Clemons, a pioneer logger in that section, it was named the "Clemons Tree Farm."

Today, seven short years later, "Tree Farming" has grown like a veritable Paul Bunyan. Over a thousand companies and individuals, owning some fourteen million acres of producing forest land, have pledged themselves under the Tree Farm program to manage and protect their woodlands for continuous production of commercial forest harvests.

The Weyerhaeuser organization, pioneer tree farmer, now operates eight tree farms. Its foresters are actively engaged in providing for the continuous production of tree crops. The Pulp Division, assured of an uninterrupted flow of West Coast pulpwood, is a reliable producer of bleached chemical woodpulp.

PULP DIVISION

WEYERHAEUSER

Neenah's Brown C. of C. Sixth Termer

NEENAH, Wis.—D. K. Brown, president and general manager of the Neenah Paper Co., was reelected to his sixth term as national councilor of the Neenah Chamber of Commerce at a meeting of the board of directors July 15. He will act as the chamber's representative with the United States Chamber of Commerce.

In the absence of S. F. Shattuck, retired vice-president of the Kimberly-Clark Corp. and chairman of the chamber's City Planning Committee, Kimberly Stuart, vice-president of the Neenah Paper Co., reported on meetings of the committee, including one with the Neenah and Menasha planning commissions. A master plan is being drafted by the state commission and the Menasha and Neenah commissions are gathering factual material for the purpose.

Mill Proceeds Despite Water Power Interruption

HOLYOKE, Mass.—So that the Chemical Paper Mfg. Co., could resume manufacturing operations July 19, in spite of a delay in resumption of the mill's canal water power, the Municipal Gas and Electric Department, on July 15, ran a new line to the plant and installed 1,000 kilowatts extra transformer capacity.

The mill had been closed for two weeks. This period included the annual vacation period and coincided with a shutdown during installation of a flood-control structure at the Chemical tailrace. This work, being done by D. O'Connell's Sons as part of the government's South Holyoke flood control project, was delayed through a cave-in of part of the oil tail race.

Sues On Notes

SPRINGFIELD, Mass. — A $65,000 suit to recover on two promissory notes for $20,000 and $40,000 was entered June 30 against Paul C. Bast, president of the Collins Mfg. Co., North Wilbraham. Plaintiff in the suits, filed with the clerk of Superior Court, is James G. Whiting of Holyoke. Both notes were dated March 12, 1946, and the plaintiff said in his declaration that nothing had been paid on either note. The $20,000 note is payable to Whiting, while the larger one is payable to him and to Margaret Whiting Bast as trustees under the will of Samuel R. Whiting for James G. Whiting.

Appellate Court Reverses Patent Infringement Suit

CHICAGO—The United States Circuit Court of Appeals on July 16 reversed a patent infringement suit originally decided in favor of the Dixie Cup Co., Easton, Pa.

Judgment for $2,184,000 had been entered in favor of Dixie against the Paper Container Mfg. Co. by Federal Judge John P. Barnes.

The suit originally was brought on 14 patents involving paper cup-making machines. Ten of the patents were withdrawn before the suit went to trial.

The Circuit Court held, after more than five years of accounting hearings, that none of the machines now being used by Paper Container infringed Dixie patents.

Easton Joins Bulkley, Dunton Pulp Co., Inc.

NEW YORK—Paul Easton has been named sales manager of the specialty products department of the Bulkley, Dunton Pulp Co., Inc., which handles the sale of Sveen Pedersen Savealls. Mr. Easton will have his headquarters in Bulkley, Dunton's offices at 295 Madison avenue.

Before joining Bulkley, Dunton, Mr. Easton had been connected with the papermakers' chemical department of the Hercules Powder Co. since 1936.

St. Regis Expanding In California

HAYWARD, Calif. — A million-dollar industry will move from Emeryville to the industrial area between San Leandro and Hayward when the St. Regis Paper Co. starts construction this fall of a laminated paper bag plant on a site at 132d Avenue and Merced.

Cost of the building, according to Robin Swayne, president, will be $350,000, and equipment valued at $600,000 will be moved from Emeryville.

Byron Weston Co. Ups Klein and Taylor

DALTON, Mass. — Frederic S. Klein has been appointed mill manager of the Byron Weston Co. Mr. Klein has been with the company since 1935, and prior to appointment to his new position was technical director of the company. At the same time Leonard P. Taylor was put in charge of "special work that has arisen in connection with the development of new types of paper in which the company is interested."

Cooney and McGinty Resign From Smith Co.

LEE, Mass.—Stephen W. Cooney and Paul R. McGinty, purchasing agent and assistant purchasing agent, respectively, of the Smith Paper, Inc., have resigned, the company states.

INDUSTRIAL RELATIONS MGR.

ROBERT C. LANDON has been appointed manager of industrial relations of the Rohm & Haas Co., and the Resinous Products & Chemical Co., Philadelphia chemicals manufacturers.

Abitibi Groundwood Pulp Mill Unit

TORONTO — With the letting of subcontracts, work can be expected to begin shortly on the groundwood pulp mill unit for Abitibi Power & Paper Co., at Iroquois Falls, Ont. The general contract has been awarded to the Foundation Co. and the cost is estimated at around $10,000,000, equipped. Plans for the mill include a wood room and screen room.

Blake, Moffitt & Towne Advances Macdonald, Inkster

SAN FRANCISCO — Palmer C. Macdonald has been named as manager of the Portland division of Blake, Moffitt & Towne succeeding Clinton L. Shorno who is retiring after many years of active service with the company. Mr. Macdonald has been with the firm for 25 years.

Succeeding Mr. Macdonald as sales manager is Frederic C. Inkster.

Court Approves Proposed St. Lawrence Reorganization

MONTREAL — Justice Frederick T. Collins, in superior court on July 17, sanctioned reorganization of the St. Lawrence Corp. Ltd., and St. Lawrence Paper Mills Co. Ltd. The two companies will now make application for supplementary letters patent and upon receipt of these the plan will become effective.

Franc-Graham Paper Co. In New Quarters

NEW YORK — Franc-Graham Paper Co., Inc., is removing on July 15 from 25 West Fifteenth Street, home of the firm since its founding 26 years ago, to larger quarters at 104 West Seventeenth Street. The telephone number, Jerome Franc, president, states, continues as heretofore, CHelsea 2-8866.

Hammermill Quartet Advanced

ERIE, Pa.—John R. Haas has been named assistant controller of the Hammermill Paper Co. Succeeding him as head of the tax and audit section is Herman C. Weber. George W. Carr is now auditor of receipts and disbursement. Succeeding him as head of the general accounting section is Gerald S. Sherman.

Girls Golf July 22

NEENAH, Wis.—Feminine employes of Kimberly-Clark Corp. will have their golf jamboree July 22 at Ridgeway Country Club. Miss Charlotte Smith is general chairman. Cards and outdoor games are planned for those who do not golf.

Oneida's Pentz to Clifton, N. J.

CLIFTON, N. J.—R. E. Pentz has been appointed sales manager of Oneida Paper Products, Inc., manufacturer of display and protective packaging. Previously he was manager of Oneida's plant in Los Angeles.

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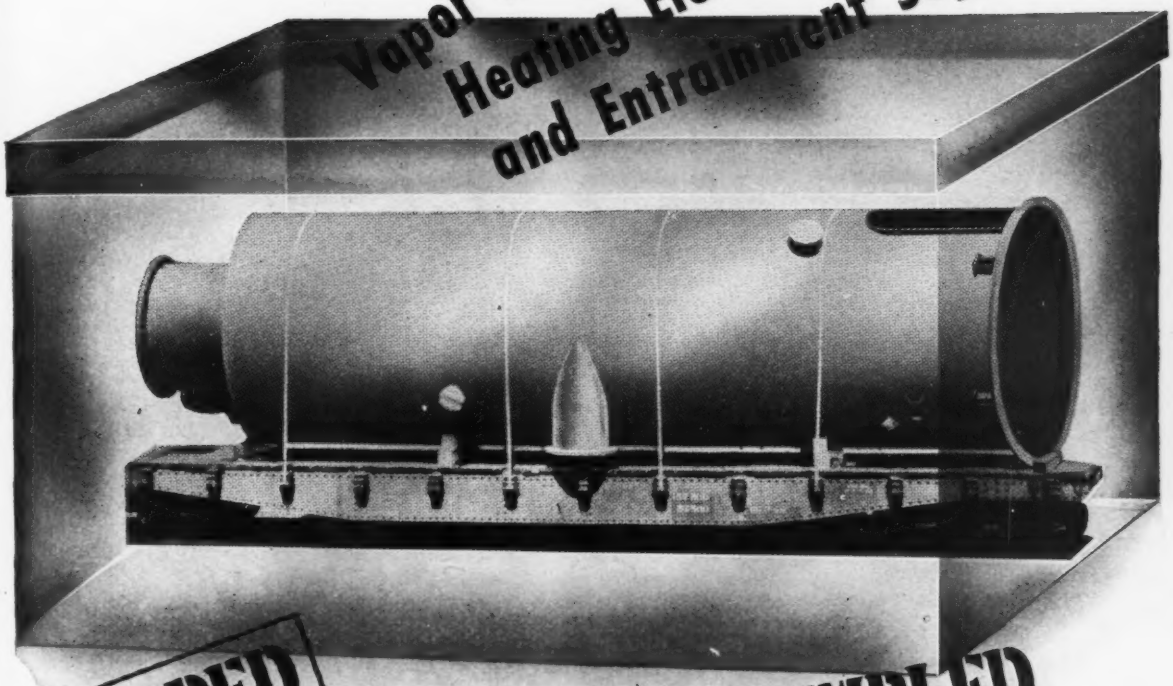

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As its name implies, this new evaporator requires no structural supports, and thus it needs less floor space than conventional types of identical capacity. It needs no special housing, and may be set up out of doors if climatic conditions permit.

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TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 21, 1948.

Wood pulp production for the country as a whole was well sustained through May at levels consistent with the steady output of paper and board. A new high mark was established at 1,119,983 tons, principally as a result of capacity increases in sulphate pulp and continued favorable operations in the northern groundwood mills, the U. S. Department of Commerce advises. Wood pulp operations averaged 95.2 percent of production base with sulphate reaching 98.5 percent on a new higher base and "all other" mounting to 98.3 percent.

While it is not yet practicable fully to analyze the effects of the Columbia River flood upon the pulp industry, it is believed that the supply of market wood pulp will experience no reduction as a result of the high water in the northwest which caused such destruction to integrated pulp and paper mills. Elsewhere throughout the country, with but two exceptions, the Department's Field Offices do not stress any wood pulp scarcities in pulp-consuming paper and board mills. Some inadequacy was noted in the pulp supplies of non-integrated mills in the concentrated paper producing area of southwestern Ohio, a shortage which was attributed to a delay in pulp shipments from the Pacific Northwest. Mills of the Ohio region, as in other sections of the country, are having difficulty in resolving the problem of utilizing the higher-priced pulps from northern Europe and meeting the intensifying competition in the paper industry. Despite the raw material exigencies, converting mills in this area for the most part report stock of pulp not substantially less than the average for the country. Another regional report of market pulp insufficiency emanates from the Lake States area where a number of mills are utilizing pulp from inventory for the purpose of improving their cash position, it is reported. Some of the mills pursuing this action expect curtailment of pulp stocks to continue until the latter part of this month, when a considerable shrinkage in mill inventories should have taken place.

Of the 1947 mill receipts of market pulp in the U.S., 43 percent came from domestic mills, 30 percent from Canadian, and 27 percent from northern Europe. No essential change in these relationships appeared during the early months of 1948, apart from a slight increase in the portion of pulp received from domestic producers. Receipts for the first four months were nearly 14 percent over the same 1947 period, with domestic pulp ahead 7 percent and imported pulp showing a gain of almost 20 percent.

Maintenance and increase of pulp exports to the U.S. from Sweden will depend to a considerable degree on Swedish export prices. "Consensus of reports," says the Dept. of Commerce, "offers little encouragement that export pulp prices will be adjusted downward in the immediate future. While production costs, notwithstanding their excessive rise from prewar levels, might permit some lessening of prices, the latter development is considered unlikely — especially since indications point to a growing demand for Swedish pulp from other European countries whose paper and rayon industries are gradually being regenerated." American cancellations were surprisingly heavy during the second quarter, and the tendency to transfer such lots to countries whose currencies are either "soft" or "less hard" gives anxiety to the writer of a leading Swedish journal. The Swedish pulp industry is paid for exports in domestic funds rather than in foreign exchange, and a further diversion of Swedish pulp to relatively nearby markets would be felt directly by the Government in terms of dollar exchange. Considering the "precarious situation" of Swedish currency, such a tendency is viewed as unwelcome yet a fact which the government must recognize. The Swedish writer does not indicate whether such sales were made at the prices asked of American buyers. It is, however, the opinion of Mr. Karl A. Clauson, secretary of the Association of Pulp Consumers—whose report on Scandinavian Wood Pulp appeared in *Paper Trade Journal*, issue of July 1 — that such transfers would not be made at better prices.

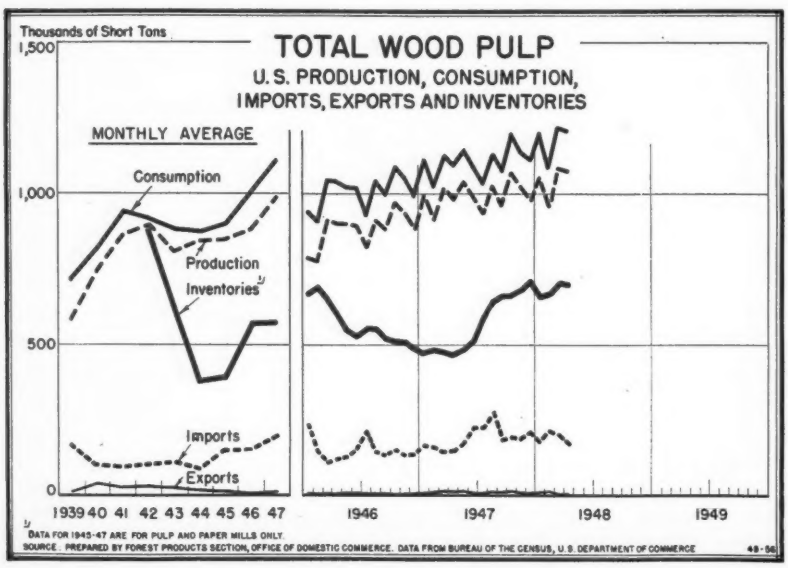
"Swedish pulp producers selling in sterling area countries," Mr. Clauson says, "demand guaranteed rates of exchange in those instances where the price of their pulp is quoted in other than Swedish kronor"; and he recommends to his association's members that their contracts, both Swedish and Finnish, give them similar protection.

Swedish pulp producers are reported unfavorably disposed towards the equalization tax, to the extent that they have refused its payment and have, in consequence, been denied licenses for the export of pulp. However, firms which have agreed to set aside amounts for Business Cycle Equalization Funds and Foundations for Forestry and social purposes will be exempt from the per ton export tax, it is learned.

"Finnish trade reports express the view that pulp exports, especially unbleached sulphate, will experience some reduction in the near future as a result of the growing resistance to high prices," the Dept. of Commerce advises. "Production costs are cited as the principal factors in preventing any near term price reductions, and Finnish pulp producers hope to sell their product in other markets rather than to accept prices lower than those now in effect." (Finnish producers, like the Swedish, are paid for exports in domestic funds rather than in foreign exchange, it is reported.)

"Anxiety over the Finnish political situation, aggravated recently by Communist strikes and a cabinet crisis, has been somewhat allayed by a substantial gesture of confidence and encouragement on the part of the U.S. Government in licensing approximately $4,000,000 worth of equipment for export to Finland," the Dept. of Commerce believes. "A public expression of interest by the Swedish government in a Scandinavian defense system, and a news report concerning a request from Norway and Denmark for U. S. arms and ammunition indicate a degree of apprehension in these countries over the precariousness of their political status. Any forthcoming changes in the international situation affecting the three countries of northern Europe from which the U. S. receives nearly 27 percent of its total mill receipts of market pulp will be watched intently by our pulp and paper industry and more particularly by the executives of

(Continued on Page 44)



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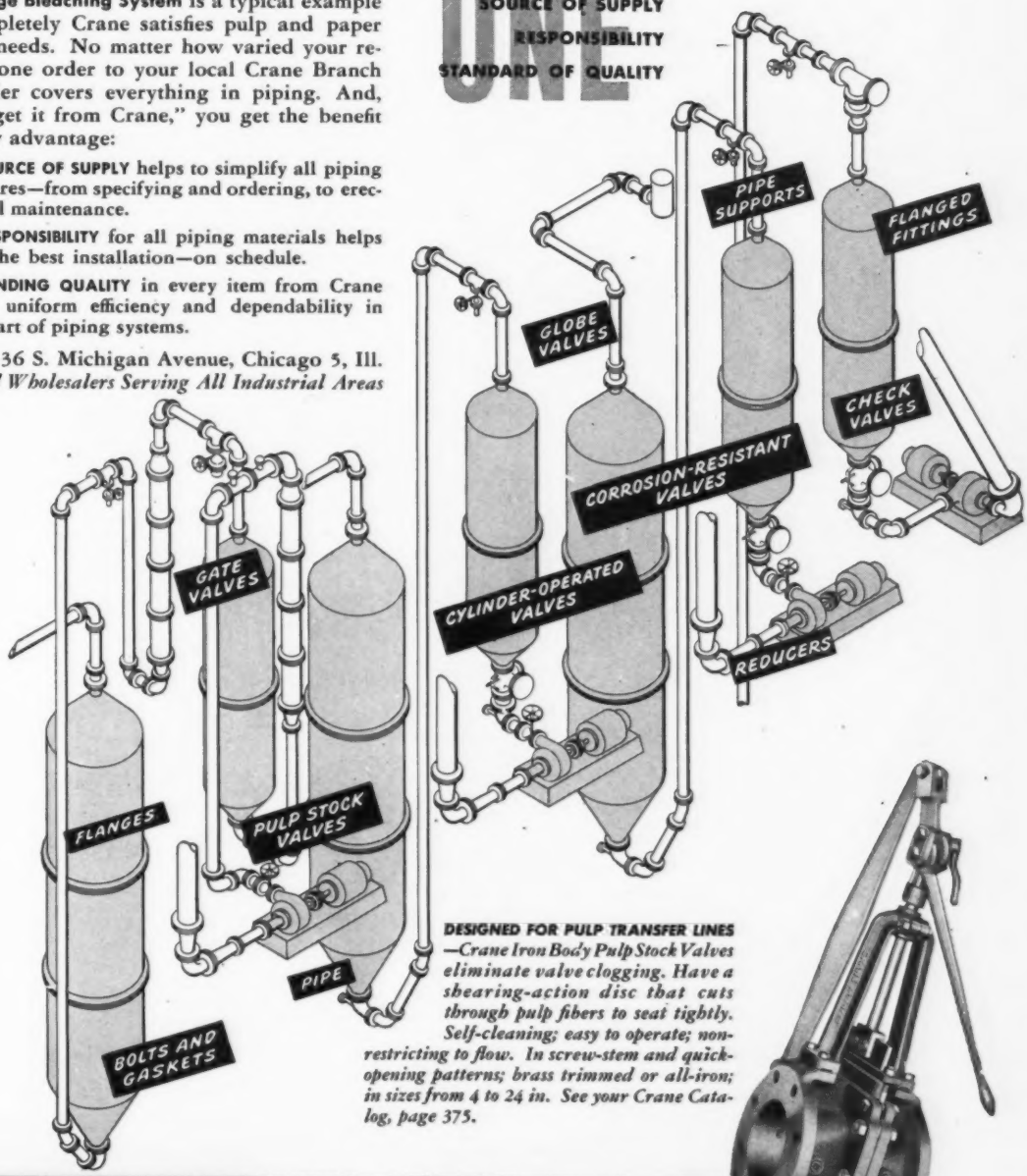

DESIGNED FOR PULP TRANSFER LINES—*Crane Iron Body Pulp Stock Valves eliminate valve clogging. Have a shearing-action disc that cuts through pulp fibers to seat tightly. Self-cleaning; easy to operate; non-restricting to flow. In screw-stem and quick-opening patterns; brass trimmed or all-iron; in sizes from 4 to 24 in. See your Crane Catalog, page 375.*

EVERYTHING FROM . . .

VALVES • FITTINGS
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FOR EVERY PIPING SYSTEM

IMPORTS

Week Ended July 17

NEW YORK

Newsprint

News Syndicate Co., Mimi, Thorold, 2187 rolls.
H. G. Craig Co., G. T. D., Donnacona, 372 rolls.
News Syndicate Co., Ted, Thorold, 2307 rolls.
H. G. Craig Co., G. D. D., Donnacona, 344 rolls.
N. Y. Journal American, Markland, Liverpool, N. S., 1124 rolls.
N. Y. Herald Tribune, Markland, Liverpool, N. S., 1779 rolls.
N. Y. World Telegram, Markland, Liverpool, N. S., 716 rolls.
Brooklyn Eagle, Markland, Liverpool, N. S., 692 rolls.
Herald Statesman Inc., Markland, Liverpool, N. S., 42 rolls.
Price & Pierce, Ltd., Markland, Liverpool, N. S., 351 rolls.
Richmond Newspapers, (Richmond, Va.), Markland, Liverpool, N. S., 1783 rolls.

Wrapping Paper

Public National Bank Trust Co., Gripsholm, Gothenburg, 21 bls.
Manufacturers Trust Co., Gripsholm, Gothenburg, 27 rolls, 103 bls.
Lafayette Trust Co., Gripsholm, Gothenburg, 241 rolls.

Drawing Paper

National Safety Bank, Avranches, Havre, 13 cs.
H. Reeve Angel & Co., Inc., America, Southampton, 5 cs.
Winsor Newton, Inc., America, Southampton, 1 cs.

Filter Paper

J. Manheimer, Avranches, Bordeaux, 47 bls.
H. Reeve Angel & Co., Inc., America, Southampton, 23 cs.

Photo Paper

Alec Photo Supply Corp., American Forwarder, Liverpool, 5 cs.

Serviettes

H. W. Robinson Co., American Forwarder, Liverpool, 16 cs.

Gummed Paper

B. F. Drakenfeld & Co,, American Forwarder, Liverpool, 64 cs.

Tissue Paper

Stevens Nelson Paper Corp., Pioneer Cove, Kobe, 8 cs. (insulating).
B. F. Drakenfeld & Co., American Forwarder, Liverpool, 9 cs. (pottery).
Drueding Bros. Co., Pres. Polk, Genoa, 6 cs. (paper caps).

Napkins

H. W. Robinson Co., Falstria, Copenhagen, 8 ctns.

Miscellaneous Paper

ManufacturersTrust Co., Gripsholm, Gothenburg, 1054 rolls.

Rags, Baggings, Etc.

A. de Vries Trading Corp., Gudrun Maersk, Rouen, 48 bls. rags.
Chase National Bank, Gudrun Maersk, Dunkirk, 254 bls. cotton waste.
Midwest Waste Material Co., Gudrun Maersk, Dunkirk, 32 bls. scrap bagging.
Chase National Bank, City of Swansea, Calcutta, 75 bls. jute bagging.
M. O. Schimmel Corp., City of Swansea, Port Said, 45 bls. scrap bagging.
New England Waste Co., City of Swansea, Bombay, 150 bls. cotton waste.
J. Stein, Mormacelm, Buenos Aires, 8 bls. rags.
Manufacturers Trust Co., Executor, Genoa, 55 bls. old waste bagging.
National City Bank, Executor, Genoa, 76 bls. old waste bagging.
J. P. Fleisig, Executor, Genoa, 158 bls. old dark cotton rags.
New England Waste Co., Ocean Viscount, Cochin, 100 bls. cotton waste.
E. J. Keller Co., Inc., Avranches, Bordeaux, 82 bls. old cotton rags.
Midwest Waste Material Co., Arnedyk, Rotterdam, 38 bls. scrap bagging.
McKay & Co., Indochinois, Dunkirk, 60 bls. cotton waste.
J. J. Rozendaal Inc., Indochinois, Dunkirk, 7 bls. cotton waste.
1st National Bank Chicago, Kristin Thorden, Leningrad, 1819 bls. cotton waste.
New England Waste Co., Pres. Polk, Bombay, 100 bls. old jute rags, 200 bls. cotton waste.
Castle & Overton, Inc., Pres. Polk, Leghorn, 48 bls. old jute bags.
National City Bank, Pres. Polk, Genoa, 336 bls. old waste bagging.
W. O. Gahiand Corp., Scott E. Land, Bombay, 100 bls. old jute rags.
(———), Scott E. Land, Bombay, 100 bls. old jute rags.
E. J. Keller Co., Inc., Scott E. Land, Bombay, 100 bls. old jute rags.
Brandwein & Co., Scott E. Land, Bombay, 200 bls. cotton waste.
Chase National Bank, City of Lille, Calcutta, 75 bls. old jute rags.
Midwest Waste Material Co., City of Lille, Calcutta, 50 bls. old jute rags.

Casein

The Borden Co. Chemical Division, Mormacelm, Montevideo, 3950 bags (unground), 198675 kilos.
E. Lang, Inc., Mormacelm, Buenos Aires, 417 bags, 25020 kilos.
Fallek Products Co., Mormacelm, Buenos Aires, 718 bags.
Hercules Powder Co., Mormacelm, Buenos Aires, 1000 bags (lactic), 500000 kilos.
American British Chemical Supplies, Brazil, Buenos Aires, 700 bags (lactic).
Hercules Powder Co., Brazil, Buenos Aires, 3000 bags (lactic).
American Cyanamid Co., Brazil, Buenos Aires, 1000 bags.
F. H. Paul & Stein Bros., Brazil, Buenos Aires, 500 bags (lactic).
New York Trust Co., Brazil, Buenos Aires, 2000 bags (lactic).

Woodpulp

Price & Pierce, Ltd., Markland, Liverpool, N. S., 1045 bls. unbleached sulphite pulp.

Wood Pulp Boards

Jay Madden Corp., Mormacmail, Helsingfors, 59 rolls, 364 bls.
Jay Madden Corp., Innaren, Kotka, 173 rolls, 2 bls. (solid white).

PHILADELPHIA

Madden Reeve Angel & Co., Mormacmail, Helsingfors, 326 rolls newsprint.
Pulp Sales Corp., Innaren, Kotka, 945 bls. prime unbleached kraft sulphate pulp, 1500 bls. prime unbleached sulphite pulp, 316 bls. prime unbleached strong sulphite pulp, 3683 bls. white dry mechanically ground woodpulp, 1505 bls. prime bleachable unbleached sulphite pulp.

BALTIMORE

Pulp Sales Corp., Innaren, Kotka, 1651 bls. white dry mechanically ground wood pulp, 1675 bls. prime unbleached sulphite pulp, 510 bls. prime unbleached light & strong sulphate pulp, 1170 bls. prime unbleached sulphate pulp, 65 bls. prime unbleached rough sulphate pulp, 2915 bls. prime unbleached kraft sulphate pulp, 1455 bls. prime bleachable unbleached strong sulphite pulp, 302 bls. prime unbleached bond sulphite pulp, 1135 bls. prime unbleached strong sulphite pulp.
Gottesman & Co., Inc., Mormacteal, Gothenburg, 1778 bls. dry sulphate pulp.
Intercontinental Co., Jefferson City Victory, Antwerp, 74 rolls newsprint.
Bulkley Dunton Co., Arlyn, San Juan, 66 rolls paper.

NORFOLK

E. J. Keller Co., Inc., Jefferson City Victory, Antwerp, 77 bls. old bagging.

LOS ANGELES

Philip Senegran, Pres. Polk, Leghorn, 31 bls. jute rags.

SAN FRANCISCO

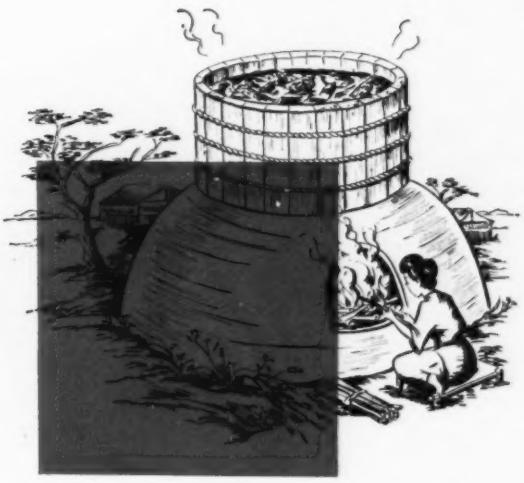
(———), Pres. Polk, Naples, 265 bls. rags.
1st National Bank of Boston, Pres. Polk, Genoa, 254 bls. dark cotton rags.

Post Alkali Quotas For 3d Quarter Export

Third quarter export quotas for alkalis announced by OIT, Dept. of Commerce, are listed with their census schedule B numbers, in 1,000 pound units:

	Caustic soda 837,300	Soda ash 836,500 837,900
Newfoundland	.....	15
Iceland	.....	15
Ireland	.....	25
Argentina	10,000	12,000
Bolivia	75	200
Brazil	22,000	17,000
Chile	1,200	500
Colombia	4,175	2,300
Costa Rica	200	100
Cuba	2,950	3,000
Dominican Republic	400	100
Ecuador	250	300
Guatemala	400	100
Haiti	50	100
Honduras	225	2
Mexico	13,150	13,000
Nicaragua	275	100
Paraguay	250	150
Peru	1,750	3,500
El Salvador	320	100
Uruguay	1,625	3,500
Venezuela	1,775	1,100
Panama	300	150
Australia	3,000	7,000
China	3,300	1,500
Egypt	4,000	50
Greece	125	40
Holland	3,250	3,000
Hong Kong	2,750	800
India	14,000	11,000
Iran	100	.....
Lebanon	50	.....
Malaya	1,100	1,250
Netherlands East Indies	5,250	550
Norway	150	.....
Pakistan	4,500	300
Philippine Islands	4,125	1,000
Portugal	200	100
Siam	25	500
South Africa	1,250	1,000
Turkey	2,500	2,000
British West Indies	250	50
Curacao	550	.....
French West Indies	25	.....
British Guiana	150	.....
Surinam	50	.....
Denmark	1,250	1,000
Burma	25	.....
French Oceania	50	.....
Mozambique	100	.....
Southern Rhodesia	15	.....
Total	113,510	88,497
Special projects	13,900	7,778
Undistributed reserve	16,590	3,725
Total authorized allocation	144,000	100,000

Interesting facts about PAPER



According to the Chinese encyclopedia, silk waste was used in paper making until 105 A.D. when T'sai Lun, famous Chinese statesman, invented a paper made from bark, hemp, rags and old fish nets.

INTERESTING FACTS ABOUT BISMARCK BROWN RX CONC. DUSTLESS

Tinctorially one of the strongest of basic colors, BISMARCK BROWN RX CONC. DUSTLESS is used extensively to produce browns, tans, and as a dulling agent for the brighter Acid, Basic and Direct colors in both sized and unsized papers. Although it does not dye bleached fibers well, its excellent solubility makes it well suited for both beater and calender coloring.

BISMARCK BROWN RX CONC. DUSTLESS is widely used in such paper applications as kraft, poster, tissue, wrapping and boxboard.

Calco
HELLER & MERZ DEPARTMENT

CALCO CHEMICAL DIVISION
Heller & Merz Department

AMERICAN CYANAMID COMPANY
Bound Brook, New Jersey

New York • Chicago • Boston • Philadelphia • Charlotte • Providence

PRICES

Quotations indicate trends in an open market. At the moment they can be of little more value. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.

NEW YORK

Paper

(Delivered New York)

Standard News, per ton—	
Rolls, contract	$93.00/$96.00
Sheets	108.00/109.00
Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.	
Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.25/ 8.00
Standard Wrapping	6.50/ —
Standard Bag	6.50/ —
Tissues—Per Ream 24x36 (480) 11 lbs. Zone 1.	
Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2.00
Wh. No. 1½	1.60/ —
Wh. No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Manila No. 2	1.62/ —
Shred. Wh. No. 1 cwt.	1.10/ 1.50
Toilet—Per Case of 100 rolls—1 M Sheets.	
Unbleached	$8.50/$10.00
Bleached	8.50/ 10.00
Paper Towels—Per Case of 3750—Zone 1.	
Wh. Jr. M'tif'd 9¼x9½	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15
Manila—per cwt.—C-1 f.a.	
No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila	9.75/ —
5 lb. Manila	10.75/ 11.25
Boards, per ton—	
Plain News	$92.50/ —
Filled News	94.00/ —
Plain Chip	90.00/ —
Sgl. Mla. Lnd. Chip*	100.00/102.50
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	100.00/ —
Kraft Corr. .009	105.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—

White, 16 lb.

Bonds, per cwt.

	Carton 4 C't'n	Ton
100% Rag Ext. No. 1	$55.00 $50.80	$48.70
100% Rag	48.25 44.55	42.70
75% Rag	37.50 34.55	33.10
50% Rag	32.25 29.40	28.25
25% Rag	28.75 26.15	25.10

Ledgers, per cwt.

100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—

White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—

White, Cased Paper

	(Per cwt.) Case	Ton
No. 1 Glossy Coated	$20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
No. 1 Antique (Watermarked)	15.90	15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Bleached Sulphate	160.00/185.00
Unbleached Sulphate	125.00/150.00
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ 90.00
Hardwood and Specialty Grades	Nominal

* Note—Above quotations are correct. Those published in July 1 issue were incorrect.

Swedish Quotations

On dock, Atlantic Ports

Bleached Kraft	185.00/ —
Bleached Sulphite	185.00/ —
Unbleached Sulphite	155.00/157.50
Unbleached Kraft	147.50/ —

Finnish Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.o.b. Ship. Pt. Plus Dealer's Commission)

White Shirt	$11.50/$12.00
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.o.b. Ship. Pt. Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.50/ $6.00
No. 1 Whites Miscellaneous	4.50/ 5.00
No. 2 Whites Repacked	3.50/ 3.75
No. 2 Whites Miscellaneous	3.00/ 3.50
Blue Overalls	3.75/ 4.00
Thirds and Blues Repacked	3.25/ 3.50
No. 1 Roofing Rags	1.70/ 1.80
No. 2 Roofing Rags	1.60/ 1.70
No. 3 Jute Bagging	1.50/ 1.60
No. 4 Brussels and hard back carpets	1.50/ 1.60
No. 5A Roofing Rags	1.50/ 1.60

New Foreign Cotton Cuttings

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$5.50/ $5.75
New Mixed Cuttings	6.25/ 6.50
Light Silesias	9.25/ 9.50
Light Flannelettes	9.25/ 9.50
New White Cuttings	12.00/ 13.00
New Unbleached Cuttings	12.25/ 13.00
Fancy Shirt Cuttings	6.50/ 7.00
Light Prints	7.75/ 8.00
Bleachable Khaki, No. 1	7.00/ 7.50
Unbl. Khaki, No. 1	6.25/ 6.75

Old Foreign Rags

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Linens	nominal
No. 2 White Linens	nominal
No. 3 White Linens	nominal
No. 4 White Linens	nominal
No. 1 White Cottons	8.00/ 10.00
No. 2 White Cottons	7.00/ 8.00
No. 3 White Cottons	6.00/ 6.50
No. 4 White Cottons	4.00/ 4.50
Extra Light Prints	6.50/ 7.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	4.00/ 4.50
Dutch Blue Cottons	5.25/ 5.50
Checks and Blues	4.00/ 4.25
Linsey Garments	2.35/ 2.50
Dark Cottons, European	2.30/ 2.35
Dark Cottons, Egyptian	3.25/ 3.50
Old Shopperies	2.20/ 2.30
New Shopperies	2.25/ 2.30

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$6.75/ $7.25
Domestic Gunny, No. 1	6.75/ 7.25
Heavy Wool Tares	6.25/ 6.50
No. 1 Scrap Baggings	5.50/ 5.75
Roofing Bagging	1.50/ 1.75
Foreign Manila Rope	6.00/ 6.75
Domestic Manila Rope	6.50/ 6.75
Jute Strings	5.00/ 5.25
No. 1 Sisal Strings	5.25/ 5.50
Mixed Strings	1.75/ 2.50

Waste Paper

Base Prices to Mills for Average Packings F.o.b. New York, Baled

	(Per Ton)
No. 1 Hd. Wh. Env. Cts, one cut	$155.00/$165.00
No. 1 Hard White Envelope Cuts	145.00/ 155.00
No. 1 Hd. Wh. Shavings, unruled	140.00/ 150.00
No. 1 Hd. Wh. Shavings ruled	110.00/ 130.00
Soft White Shavings, one cut	140.00/ 150.00
No. 1 Soft White Shavings	125.00/ 135.00
Soft White Shavings, Misc.	115.00/ 125.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Gd'wd Fly Leaf Shavings	35.00/ —
No. 1 Heavy Books & Magazines	23.00/ 24.00
Mixed Books	15.00/ 18.00
No. 1 White Ledger	75.00/ 80.00
Col. Ledger	50.00/ 55.00
Manila Tab. Cards	90.00/ 95.00
New Man. Env. Cuttings, one cut	100.00/ 110.00
New Manila Envelope Cuttings	65.00/ 75.00
Extra Manilas	25.00/ 30.00
Mxd Kraft, Env. & Rag Cuttings	75.00/ 85.00
Kraft Envelope Cuttings	100.00/ 110.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00/ 75.00
New Kraft Corrugated Cuttings	70.00/ 75.00
No. 1 Assorted Old Kraft	50.00/ 55.00
New Jute Corrugated Cuttings	27.00/ —
Old 100% Kraft Corr. Containers	35.00/ 40.00
Old Corrugated	19.00/ 21.00
No. 1 News	11.00/ 12.00
No. 1 Mixed Papers	8.00/ 9.00
Box Board Cuttings	8.00/ 9.00
White Blank News	75.00/ 85.00
Overissue News	16.00/ 17.00
Mill Wrappers	20.00/ 22.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)	
Coarse Polished—India	.35¼ / .36½
Fine Polished Fine India	.41¾ / .45
Unpolished—Paper Makers	.32 / .35½
Tube Rope	.33¼ / .35¼
Wrapping	.37 / .39
Cotton	.63¼ / .66¾
(Hard Fiber)	
Mex. Sisal	.21 / .27
Manila (Reprocessed)	.30 / .32
(American Hemp)	
Polished Hemp	.36¾ / .60
Unpolished	.32¼ / .54

PHILADELPHIA

Domestic Rags (New)

(F.o.b. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.10½ / .11
New White No. 2	nominal
Light Silesias	.07½ / .08
Black Silesias, soft	.06 / .06½
New Unbleached	.10½ / .11¼
Washable Prints	.06½ / .07
Washable No. 1	.05 / .05½
Blue Overall	.07½ / .08
Cottons—According to grade—	
Washable Shredding	.03 / .03½
Fancy Percales	.06¾ / .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.05¾ / .06½
Bleachable Cotton Cuttings	.06½ / .07
Men's Corduroy	.05½ / .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½ / .06

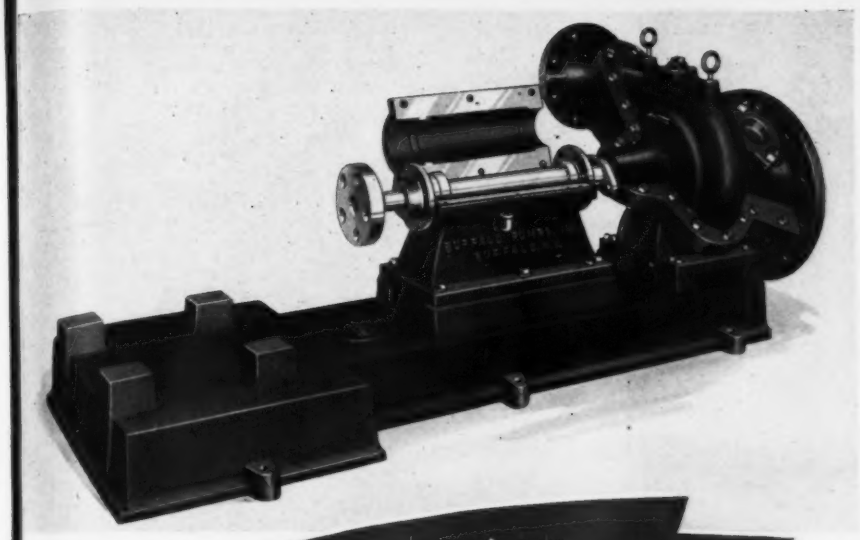
Domestic Rags (Old)

(F.o.b. Eastern Shipping Point)

White No. 1—Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—	
Miscellaneous	2.50 / 2.75
Repacked	3.00 / 3.25
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.65 / 1.70
Domestic No. 2	1.55 / 1.60
Roofing Bagging	1.45 / 1.50
Old Manila Rope	5.75 / 6.00

(Continued on page 30)

CENTRIFUGAL PUMPS FOR EVERY SERVICE



"Buffalo" Diagonally Split-Shell Rubber-Lined Paper Stock Pump

HANDLES Corrosive Stocks

All parts exposed to liquids in this "Buffalo" Pump are lined with hard or medium rubber, as required — providing LONG LIFE in the handling of chlorinated paper stock, concentrated hydrochloric, other corrosive liquids. This wear-worthy pump is also recommended for handling liquids containing abrasive solids.

This construction actually helps maintain the quality of acids handled—as well as substantially reducing your pump operating costs.

Too, this special pump gives you all the benefits of the regular "Buffalo" Split-Shell line—accessibility of impeller, the non-clogging feature and the high-efficiency impeller.

For economy in pumping corrosive liquids, it will pay you to write for Bulletin 953-F.

BUFFALO PUMPS, INC.

159 MORTIMER STREET BUFFALO, N. Y.

Canada Pumps Ltd., Kitchener, Ont.

PUMPS by "Buffalo"

For

- WATER ANY TEMPERATURE
- PAPER STOCKS (NON-CLOGGING)
- GENERAL SERVICE
- ACIDS
- ALKALIS
- SLURRY
- CONDENSATE RETURN
- SUMP CLEARANCE
- FIRE SERVICE
- SEWAGE
- SELF-PRIMING SERVICE

RUGGED, PRECISION CONSTRUCTION — FOR LONG LIFE

PRICES CONTINUED FROM PAGE 28

Bagging
(F.o.b. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	5.00 / 5.50
No. 1 Clean Bright—	
Sisal Strings	.04¼/ .05
No. 2 Clean Bright—	
Sisal Strings	.03½/ .04
Sisal Jute	.02¾/ .03
Scrap—	
No. 1	5.00 / 5.50
No. 2	2.50 / 3.00

Old Papers
F.o.b. Phila. Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/$115.00
No. 1 Hard White Shavings, unruled	100.00/ —
Soft White Shavings	80.00/ —
White Blank News	65.00/ 70.00
Soft White Shavings, One Cut	/ 80.00
No. 1 White Ledger	65.00/ 70.00
No. 1 Heavy Books & Magazines	20.00/ 22.00
Overissue Magazines	nominal
New Manila Envelope Cuttings	75.00/ —
No. 1 Assorted Old Kraft	35.00/ 40.00
No. 1 Mixed Paper	8.00/ 10.00
Box Board Cuttings	8.00/ 10.00
Kraft Corrugated Cuttings	75.00/ 80.00
Old Corrugated	20.00/ 24.00
Overissue News	13.00/ 15.00
No. 1 News	10.00/ 12.00

BOSTON

Old Papers
F.o.b. Phila. Mill Prices, Baled

No. 1 Hard White Shavings, unruled	$6.25 /$6.75
No. 1 Hard White Shavings, ruled	6.00 / 6.50
Soft White Shavings, Misc.	6.00 / 6.25
No. 1 Fly Leaf Shavings	— / —
No. 2 Fly Leaf Shavings	4.25 / —
No. 1 Grdwd. Fly Leaf Shvgs.	1.75 / 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50 / 1.75
Mixed Colored Shavings	2.00 / 2.25
New Manila Env. Cuts, one cut	4.50/ / 4.75
Hard White Envelope Cuts, one cut	7.00 / —
Triple S'ted No. 1 Br. Soft Kraft	3.75 / 4.00
Mixed Kraft Env. & Bag Cuttings	4.00 / 4.25
Kraft Envelope Cuttings	5.00 / 5.50
No. 1 Heavy Books & Magazines	1.75 / —
New Manila Env. Cutt'gs, one cut	—/ /
New Manila Envelope Cuttings	4.00 / 4.25
White Tabulating Cards	5.00 / —
Groundwood Tabulating Cards	1.50 / 1.75
White Blank News	2.25 / 2.50
No. 1 Assorted Old Kraft	3.50 / 4.00
No. 1 Mixed Paper	.47½/ —
Overissue News	.90 / 1.00
No. 1 News	.55 / .60
Box Board Cuttings	.60 / .70
New Corrugated Cuttings, Kraft.	2.75 / 3.00
Old Kraft Corrugated Containers	2.00 / 2.25
Old Corrugated Containers	— / 1.10
Jute Corrugated Cuttings	1.07½/ —
Paper Strings	2.00 / 2.25

Bagging
(F.o.b. Boston)

Gunny Bagging—	
Foreign	(nominal)
Domestic	7.00 / —
Sisal Rope No. 1	6.25 / —
Sisal Rope, No. 2	5.50 / —
Mixed Rope	3.00 / —
Mixed Strings	1.60 / —
Transmission Rope—	
Foreign	nominal
Domestic	3.00 / 3.50
Manila Rope—	
Foreign	nominal
Domestic	6.75 / —
Jute Carpet Threads	6.00 / —
Bleachery Burlap	— / 7.00
Scrap Burlap—	
Foreign	6.00 / 6.25
Domestic	6.00 / 6.25
South America	6.00 / 6.25
Wool Tares	
Foreign	6.25 / —
Domestic	6.25 / —
Austr. Wool Pouches	7.50 / —
New Zealand Wool Pouches	7.50 / —
New Burlap Cuttings	6.50 / —
Heavy Baling Bagging	5.25 / 5.75
Paper Mill Bagging	5.50 / 5.75
No. 1 Roofing Bagging	2.25 / 2.50

Domestic Rags (New)
(F.o.b. Boston)

Shirt Cuttings—	
New Light Prints	.07½/ —
Fancy Percales	.08 / —
New White No. 1	.11 / .11¾
New Light Flannelettes	.08 / .08½
Canton Flannels, Bleached	.10 / .11
Underwear Cutters, Bleached	.11½/ —
Underwear Cutters, Unbleached	.11 / .12
Silesias No. 1	.08 / .08½
New Black Silestas	.04½/ —
Red Cotton Cuttings	.05 / —
Blue Overalls	— / .08½
Soft Unbleached	.11 / .12
Blue Cheviots	.08½/ .09
Fancy	.06 / —
Washable	.06 / —
Khaki Cuttings	.06½/ .07½
Corduroy	.03½/ —
Men's Corduroy	.04 / —
Khaki Canvas	— / .06
B. V. D. Cuttings	.11¼/ —

Domestic Rags (Old)
(F.o.b. Boston)

White No. 1—	
Repacked	5.00 / 5.50
Miscellaneous	4.50 / 5.00
White No. 2—	
Miscellaneous	2.65 / —
Twos and Blues, Repacked	2.75 / —
Old Blue Overalls	4.00 / 4.50
Thirds and Blues, Repacked	2.20 / —
Miscellaneous	1.80 / —
Black Stockings	3.50 / 4.00
Roofing Stock—	
No. 1	1.70 / —
No. 2	1.60 / —
No. 3	1.50 / —
No. 4	1.50 / —
No. 5, Quality A.	1.60 / —
Quality B.	1.50 / —
Quality C.	.95 / —
Old Manila Rope	6.00 / —

Foreign Rags
(F.o.b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper
(F.o.b. Chicago) Mill Prices, Baled

Shavings—	
No. 1 Hard White Envelope cuts, one cut	$150.00/ —
No. 1 Hard White Shavings, unruled	140.00/ —
No. 1 Soft White Shavings	120.00/ —
No. 1 White Ledger	85.00/ —
No. 1 Heavy Books & Magazines	35.00/ —
White Blank News	80.00/ 85.00
Mixed Kraft Env. & Bag Cuttings	90.00/ 110.00
No. 1 Assorted Old Kraft	35.00/ —
Overissue News	24.00/ —
No. 1 News	11.00/ —
No. 1 Mixed Paper	11.00/ —
Old Corrugated	23.00/ —
Mill Wrappers	17.00/ —

MARKETS

Blanc Fixe
Prices firm following price rise. Demand strong. Pulp is currently quoted at $87.00 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $77.50 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder
Supply adequate. Delivery good. Shortage of shipping containers restricts export. Prices range from $4.25 to $4.50 per 100 pound drums, l.c.l. works.

Casein
Demand dull; registers seasonal mill shutdowns. Prices steady. Argentine production off as well as domestic. Current prices on processed acid precipitated casein at 31 to 33 cents per pound for dimestic grades and 28¼ to 29½ cents for imported grades, f.o.b. shipping point.

Caustic Soda
New strike likely to keep output tight through year. Solid caustic is reported at $3.10 per cwt.; flaked and ground is quoted at $3.50 per cwt. in 400 pound drums, $4 to $4.25 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.50 per cwt.; liquid 73 percent in tank cars at $2.60 per cwt., at works.

China Clay
Supply excellent. Demand steady. Domestic filled clay is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine
With another plant strike bound, supply is tight. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt., in multi-unit tank cars, f.o.b., works.

Rosin
Domestic and foreign buying dull. Resistance to price levels is evident. Gum prices dip. Increasing quantities going under loan. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah; B, $6.50; G, H, $7.25; I, K, $7.31. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $5.00; FF, $6.50.

Rosin Size
Seventy percent gum and pale wood grades. Supply ample. Demand good. Tank cars, $6.15 to $6.25, f.o.b. southern shipping point.

Salt Cake
Demand continues ahead of supply with slight improvement in shipments. Production under contract. Domestic salt cake is quoted at $25 to $28.

Soda Ash
Supply somewhat easier. Deliveries close to schedule. Current prices, car lots, per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Sodium Bicarbonate
Strong demand with supply good. Reported as $1.95 per cwt. paper bags, carload lots.

Starch
Supply good. Demand eased by mill shutdowns. Prices steady. Pearl grade quoted at $7.00 per 100 pounds; powdered starch at $7.12 per 100 pounds; car lots, New York.

Sulphate of Alumina
Demand increased. Supply steady. The commercial grades are quoted at from $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

Sulphur
Production shows heavy gain. Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

Talc
No change in domestic market. Demand continues far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

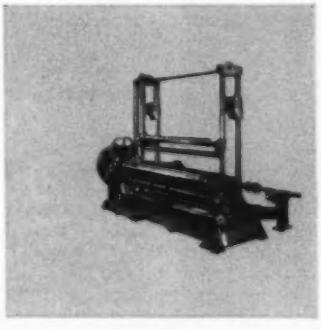
Titanium Dioxide
Demand continues extremely tight with no early improvement seen. Shipments on allocation. Anastase 17½-18c pound carload lots, 18-19c l.c.l., rutile, 19½-20c pound carload lots, 20-21c l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.

St. Regis to Promote Merchant Grade Papers

NEW YORK — The St. Regis Paper Co., following acquisition of a mill in Kalamazoo, Mich., will begin promotion of merchant grade paper lines, a company spokesman stated on July 20.

Smooth

Every Langston Slitter is built up, part by part, on a heavy bedplate. This strong foundation, on which the sturdy box section side frames rest, assures increased rigidity *and a much smoother running machine.* Langston Slitters and Roll Winders produce hard centered, uniform rolls cut clean and true.
Samuel M. Langston Company, Camden, N. J.



Langston

SLITTERS AND ROLL WINDERS

FINANCIAL RECORD

	Per Share Earnings 12 Mos. to Approx. 3/31/48 1947		Indic. Annual Divd. Rate	July 21 Closing Market Price
Preferred Stocks				
Armstrong Cork Co. $3.75 Cum.	$59.74		$3.75	
Armstrong Cork Co. $4.00 Cum. Conv.	25.85		4.00	
Celotex Corp. 5% Cum.	24.25c	$25.99f	1.00	
Champion Paper & Fibre $4.50 Cum.			4.50	
Container Corp. of Amer. 4% Cum.	102.74	92.05	4.00	
Crown Zellerbach $4.20 Cum.	42.63g		4.20	
Crown Zellerbach $4.00 Cum. Conv. 2nd	120.13g		4.00	115
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	9.16		2.50	
Flintkote Co. $4 Cum.	81.91	81.06	4.00	102½
Robert Gair Co. Inc. 6% Cum.	18.01	17.72	1.20	18½
International Paper Co. $4 Cum.	236.51	243.69	4.00	
Johns Manville $3.50 Cum.	128.81	130.02	3.50	
Kimberly Clark Corp. 4½% Cum.	70.03		4.50	
Kimberly Clark Corp. 4% Cum. Conv. 2nd	95.88		4.00	104
MacAndrews & Forbes 6% Cum.	62.20	65.56j	6.00	
Mead Corp. 4¼% Cum.	81.56	79.88	4.25	40
Mead Corp. 4% Cum. Conv. 2nd	53.34	31.11	2.00	94
Paraffine Cos. Inc. 4% Cum. Conv.	136.19a	151.93	4.00	
Rayonier Inc. $2 Cum.	13.58	14.65	2.00	
St. Regis Paper Co. 4.40% 1st A	76.93	82.07	4.40	
Scott Paper Co. $3.40 Cum.	43.95	45.37	3.40	
U. S. Gypsum Co. 7% Cum.	211.34	231.37	7.00	174¼
United Wallpaper Inc. 4% Cum. Conv.	46.06a	11.13	2.00	28½
West Virginia Pulp & Paper 4½% Cum.	75.75c	75.44	4.50	
Common Stocks				
APW Products Co.	$1.24	$1.46	$0.25	5½
American Writing Paper Corp.	1.61	1.07	0.25	6⅜
Armstrong Cork Co.	6.41		2.60	54¼
Celotex Corp.	6.59c	7.08f	1.50	30½
Certain-Teed Prods. Corp.	3.75	3.83	0.75	17¼
Champion Paper & Fibre	4.47g	4.99h	1.50	23
Congoleum Nairn Co.	4.55		2.00	
Container Corp. of America	10.09	8.91	2.00e	36⅜
Crown Zellerbach	5.22g		2.00	30⅝
Dixie Cup Co.	5.87		1.00	37
Dixie Cup Co. A				50¾
Flintkote Co.	6.27	6.16	2.50	36½
Robert Gair Co. Inc.	2.83	2.80	0.40	8¼
Great Northern Paper Co.	4.56		2.40	40
International Paper Co.	15.02	15.49	4.00	58⅜
Johns-Manville Corp.	3.17	3.17	1.40	35¾
Kimberly-Clark Corp.	4.29		1.40	22
MacAndrews & Forbes Co.	3.68	3.70j	2.50	
Marathon Corp.	3.39c	3.61f	1.00	22
Mead Corp.	7.33	7.10j	2.00	19⅝
National Container Corp.	4.13	3.59	1.20	11¾
Paraffine Cos. Inc.	2.14a	2.39	1.20	25¼
Rayonier, Inc.	7.30	7.97	1.00	31¾
Ruberoid Co.	10.88	11.46	2.75	64¼
St. Regis Paper Co.	2.66	2.82	0.60	11⅞
Scott Paper Co.	3.02	3.13	2.20	46½
Sutherland Paper Co.	6.87	6.61	2.50	40
Taggart Corp.	1.29		0.60	
Union Bag & Paper Corp.	7.93	8.29	3.00	33½
United Board & Carton	5.11b	4.92f	1.00	11⅝
U. S. Gypsum Co.	10.00	10.98	4.00	103¼
United Wallpaper	1.46a	0.28		4¾
West Virginia Pulp & Paper	11.40c	11.36	3.00	47½

(a) Year ended 6/30/47
(b) Year ended 5/30/47
(c) Year ended October 31, 1947
(e) Plus extras
(f) 12 Months to approximately April 30, 1948
(g) Year ended approximately April 30, 1947
(h) 12 Months to approximately January 30

Dividends Declared

CHESTER, Pa.—Scott Paper Co. declared a regular quarterly dividend of 55 cent on common stock, payable Sept. 13 to holders of record Aug. 31, and 85 cents on $3.40 cumulative preferred stock, payable Nov. 1 to shareholders of record Oct. 18.

DAYTON, Ohio—Mead Corp. declared quarterly dividend of 50 cents on common stock, payable Sept. 1 to holders of record Aug. 6, the same amount as paid in the last two quarters.

A regularly quarterly dividend of $1.06¼ on 4½ percent preferred and 50 cents on the $2 second preferred were also declared, both dividends payable Sept. 1 to holders of record Aug. 6.

MONTREAL—Rolland Paper Co. declared a regular quarterly dividend of 15 cents on common stock, payable Aug. 16 to shareholders of record Aug. 1.

GRAND RAPIDS, Mich. — American Box Board Co. reported net income of $980,663 or $3.52 per common share, compared with $587,869 or $2.57 per share for the corresponding period of last year. Net sales totaled $7,866,809 compared with $5,041,990 for last year.

KEARNY, N. J.—Congoleum Nairn, Inc. declared regular quarterly dividend of 37½ cents per common share, payable Sept. 15 to holders of record, Sept. 1.

SAN FRANCISCO — Crown-Zellerbach Corp. and subsidiaries report net income of $19,614,698 for the fiscal year ended April 30, or $6.81 per common share outstanding. This compares with 1947 earnings of $15,053,306, and $5.22 per common share.

According to the annual report, increase in net income reflects advance in dollar sales from $126,797,241 in 1947 to $153,395,529 in 1948, a 20 percent increase in volume.

Pulp and paper production for the year totaled 725,362 tons, compared with 691,388 tons for the year ended April 30, 1947.

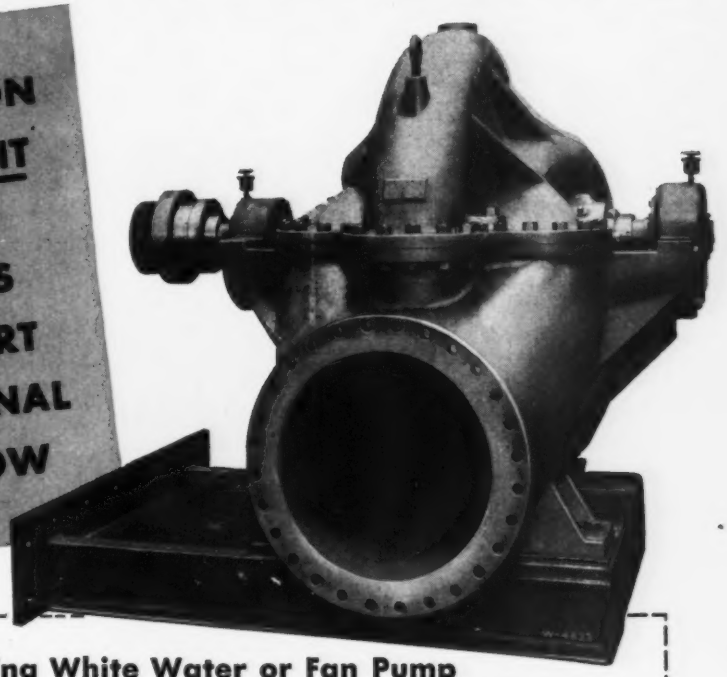
ROTHSCHILD, Wis. — The Marathon Corp. has increased the quarterly dividend on common stock to 35 cents a share, D. C. Everest, president, announced July 16 after a meeting of the board of directors. It will be payable August 20 to stockholders of record July 31. Previous quarterly rate was 25 cents a share, following an increase from 20 cents a share announced October 17, 1946. The directors also declared a dividend of $1.25 a share on the preferred stock, payable October 1, to stockholders of record September 20.

CHICAGO—Container Corp. of America reported net profit of $4,215,911 or $4.05 per common share for the six months ended June 30, compared with $5,664,668 or $5.64 a share for the same period of 1947. Comparative net sales were $65,063,188 against $63,461,921 a year ago. For the quarter ended June 30, net profits totaled $2,103,081 or $2.02 a common share, compared with $2,482,289 or $2.43 a share for the same quarter of 1947.

CAMDEN, N. J. — MacAndrews & Forbes Co. reported net profit of $603,536 or $1.79 a common share for the first six months of 1948, compared with $596,282 or $1.76 a share for the same period of 1947. For the June quarter, net profit totaled $313,325 or 93 cents a share, compared with $300,755 or 89 cents a share for the same quarter of last year.

A PROVED WAY TO BETTER PROCESS-PUMPING

WORTHINGTON FITS THE RIGHT PUMPS TO YOUR JOBS WITH EXPERT APPLICATIONAL KNOW-HOW



An Outstanding White Water or Fan Pump

Of quality materials throughout, machined to rigid tolerances, the Worthington Type LA is the last word in single-stage volute design — hydraulically and mechanically. And you have your choice of three variable speed power hook-ups — for steam, for constant speed motor through magnetic coupling, or for multi-V drive — all engineered by Worthington.

For all heads and capacities, with consistencies up to 1%.

Take any Worthington Centrifugal Pump, examine it feature by feature, and you'll see what it means to have the greatest research and manufacturing facilities in the field For Worthingtons are heavier, more solid—built to last longer, with many exclusive design improvements for better performance.

The Type LA is just one of Worthington's comprehensive range of paper-processing pumps—each built to give you peak efficiency and economy in the work for which it was designed.

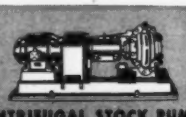
And for best results in *every* application, Worthington draws on the biggest stockpile of practical knowledge in the business—built up through more than 100 years of experience. For further proof that *there's more worth in Worthington*, call our nearest District Office Or write to *Worthington Pump and Machinery Corporation, Centrifugal Pump Division, Harrison, N. J.*

MEMBER

WORTHINGTON

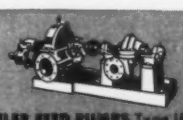
C8-7

THE WORLD'S BROADEST LINE ASSURES YOU THE RIGHT PUMP FOR EVERY JOB



CENTRIFUGAL STOCK PUMPS Type FP. Handle all kinds of stock up to 7% consistency. 4 sizes. Capacities up to 6000 GPM; heads up to 200 ft.; speeds up to 1750 RPM.

GENERAL PURPOSE PUMPS Type CF. Open impeller. Single stage. Sizes 1" to 4". Capacities up to 1000 GPM; heads up to 130 ft.; speeds up to 2475 RPM.



BOILER FEED PUMPS Type US-2. 7 sizes. Capacities up to 1500 GPM; heads up to 1000 ft.; speeds up to 3600 RPM.

Manning's Warren Retires; Three Advanced

TROY, N. Y. — Eugene Warren has retired as treasurer of the John A. Manning Paper Co., a post he held for 20 years. His successor is Joseph V. H. Hayes, formerly secretary, who has been with the firm since 1913. The latter's place will be filled by William H. Manning, former assistant secretary. Arlie G. Smith will become assistant secretary. Mr. Warren will continue as a member of the board of trustees. Other members of the board include James F. Adams, who has been re-elected president; Albert S. Loring, re-elected vice-president; Mr. Gallagher, Mr. Hayes, Mr. Manning, Roland Eustace and Lewis S. Greenleaf, Jr.

Albany Paper Merchant Erecting $100,000 Addition

ALBANY, N. Y.—The Hudson Valley Paper Co., paper merchant firm, has filed plans with the Albany Building Department for construction of an addition to its building at Broadway and Tivoli Street. Indicated cost is $100,000.

Masonite Div. Sales Office Moved to San Francisco

CHICAGO—The Masonite Corp., now extending its hardboard manufacturing operations to Ukiah, Calif., has moved its western division sales office from Los Angeles to 111 Sutter Street, San Francisco. C. H. Smith is division sales manager.

Masonite recently bought about 100 acres north of Ukiah for a factory site and more than 50,000 acres of timberland in the adjacent redwood district. The company expects to start construction work on the plant site in the fall.

City Multiplies Power Purchases From Consolidated

WISCONSIN RAPIDS, Wis.—The common council on July 6 approved a contract recommended by the water and light commission with the Consolidated Water Power Co. whereby the city will purchase power from the company at 44,000 volts instead of the present 2,300. In its letter to the council, the commission estimated cost of the project, including rewiring of the city distribution system, at between $250,000 and $300,000.

Columbia Cellulose Co. Plant Construction Starting

SAN FRANCISCO — Site clearing for the $30,000,000 pulp mill of the Columbia Cellulose Co., near Prince Rupert has been completed and construction is expected to start at once. Officials of the company, a wholly-owned subsidiary of the Celanese Corp of America, report the plant is expected to be in full operation in about two years.

The mill, which is being built on Watson Island, will have a daily capacity of 200 tons of purified cellulose.

Helphrey, Jennens, Young Upped by Eastman

ROCHESTER, N. Y. — Three executive promotions at the Eastman Kodak Co., Kodak Park Works have been announced by C. K. Flint, the plant's general manager.

John P. Helphrey has been appointed superintendent and assigned to staff duties in the office of the general superintendent of the paper division; and Willis H. Jennens and Dr. Richard V. Young have been appointed assistant superintendents in the paper sensitizing department.

Pension Plan Sets Acceptance Record

SPRINGFIELD, Mass. — A new high record for employe acceptance of a company pension plan has been established by the Package Machinery Co., of East Longmeadow, Lloyd Ellison, pension plan consultant, said on July 15. A total of 99.1 per cent of all eligible employes signed up to take advantage of the plan, which provides a retirement income at 65 years of age.

Johnston In Boston For Scott Paper Co.

BOSTON — Allan Q. Johnston, formerly district manager of the Providence-Worcester area, has been named Boston district manager in charge of industrial sales for the Scott Paper Co.

why not let

pleasant odors

do a merchandising job for you?

Your paper—whether it be paperboard, gummed paper, wrapping paper, kraft paper, parchment paper—can profit by the use of

sindar aromatics

Especially blended for use in paper and paper products . . .

effective, easy-to-use, economical

Why not give your paper a better chance with a better odor? Ask us for further information, samples and prices.

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Industrial Aromatics and Chemicals

330 West 42nd Street, New York 18, N. Y.

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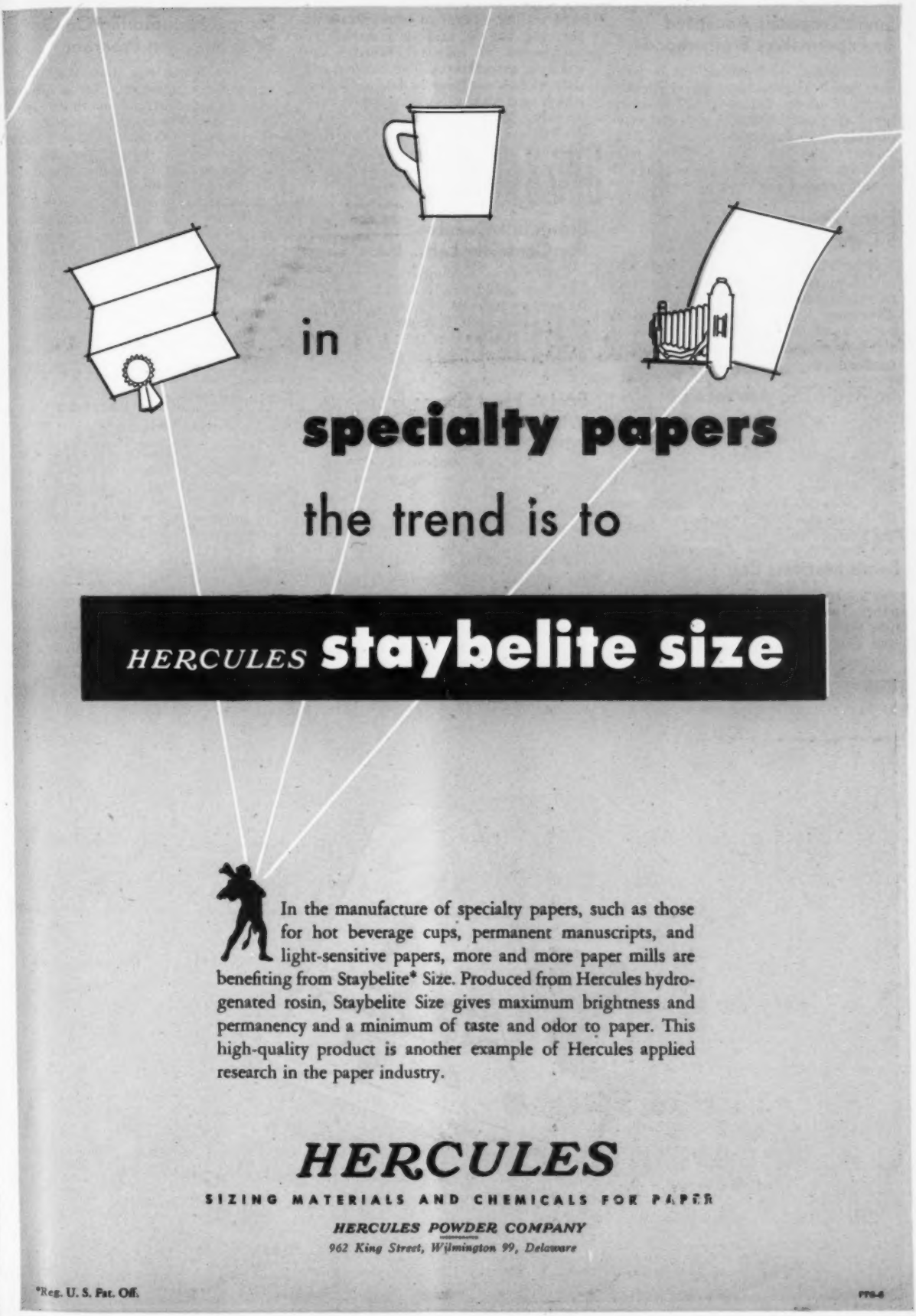

in
specialty papers
the trend is to
HERCULES staybelite size
In the manufacture of specialty papers, such as those for hot beverage cups, permanent manuscripts, and light-sensitive papers, more and more paper mills are benefiting from Staybelite* Size. Produced from Hercules hydrogenated rosin, Staybelite Size gives maximum brightness and permanency and a minimum of taste and odor to paper. This high-quality product is another example of Hercules applied research in the paper industry.
HERCULES
SIZING MATERIALS AND CHEMICALS FOR PAPER
HERCULES POWDER COMPANY
962 King Street, Wilmington 99, Delaware
*Reg. U. S. Pat. Off.
PPS-6

Smith Proposals Accepted By Papermakers Brotherhood

LEE, Mass. — Negotiations between the Smith Paper, Inc., and Berkshire Local 78 of the International Brotherhood of Papermakers, were completed on July 15, following acceptance by the union committee of a company offer of a nine percent raise in wages, with a minimum of ten cents an hour.

Hano Tis-Use 5-Cent Retailer

NEW YORK CITY — Hano Paper Co., Inc., is marketing Tis-Use facial tissues to retail at five cents a box. The self-dispensing box contains 100 single, 50 two-ply, tissues five by six inches in size. A carton (weight 16½ pounds) contains 144 boxes.

St. Regis Trio Advanced

NEW YORK—William A. Zonner has been named manager of the St. Regis Paper Co. mill at Deferiet, N. Y., and Howard C. Bryan has been made manager of the firm's Multiwall Bag Division office in Minneapolis, succeeding H. A. Hughes, Jr., transferred to the head offices in New York City.

Bemis Mattress Bag

ST. LOUIS—The Bemis Bro. Bag Co. paper specialty plant is producing a new three-ply mattress bag with a self-seal closing feature which eliminates tape sealing. Made of heavy kraft paper, the bag is said to meet all requirements of national railroad and trucking associations. The closure consists of two surfaces of latex adhesive which seal instantly and securely upon contact. No heat, clamps, tape or other devices are necessary. Although these bags are being made only in St. Louis at present, production of them at the firm's Albion, N. Y., plant will begin soon.

Brown In Milwaukee For Container Labs., Inc.

CHICAGO — Container Laboratories, Inc., has added Bradford W. Brown to its staff to serve Wisconsin and Minnesota as research executive, using the technical facilities of the Chicago Laboratory and working out of his office in Milwaukee.

Scott's Hvid Succeeds Witt at Buffalo

BUFFALO, N. Y. — Howard R. Hvid has been appointed Buffalo district manager in charge of industrial sales for the Scott Paper Co., succeeding Fred Witt, who has been named assistant advertising manager in Chester.

Planning Picnic August 1

NEENAH, Wis.—The Kimberly-Clark Activities Ass'n. is planning the annual picnic which will be held August 1 at Riverside park. Dorothy Korotev is publicity chairman.

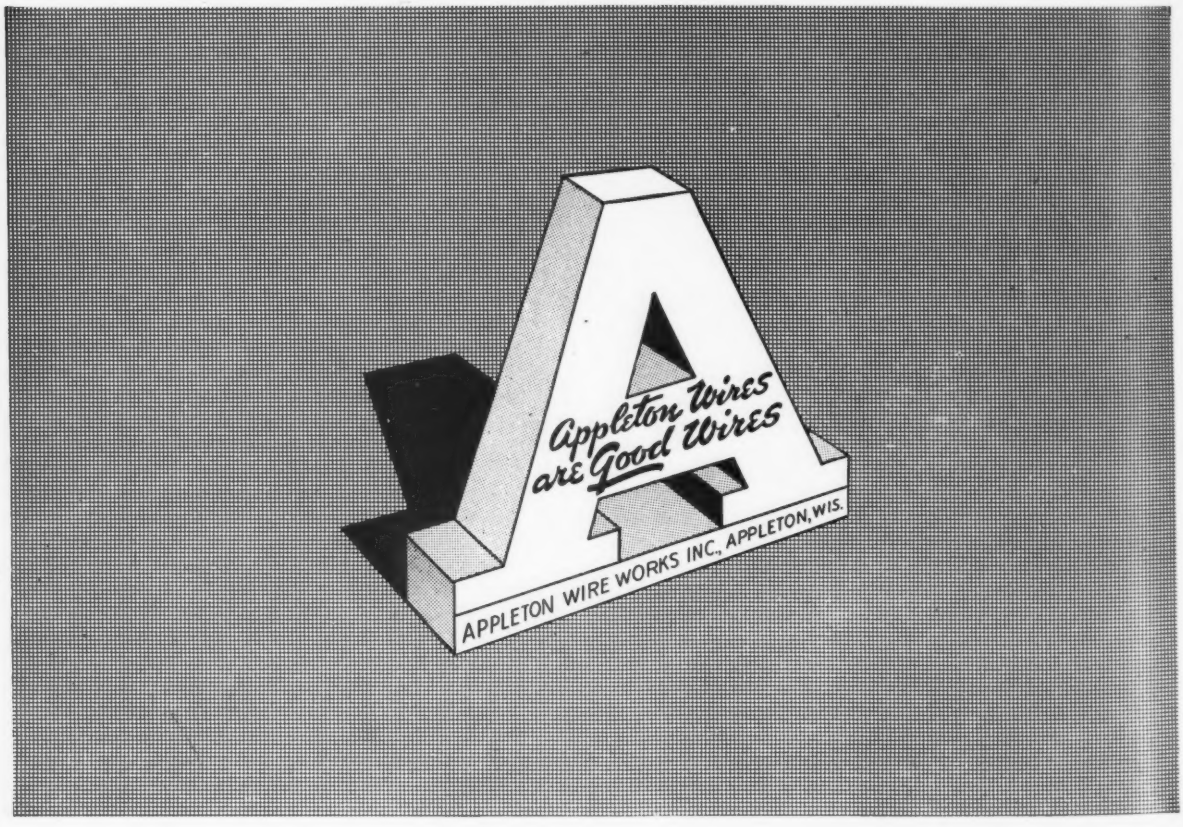
Sherman Sponsoring Co-Op Sales Selection Program

UPPER NEWTON FALLS, Mass.—Field research is underway on a program to develop practical methods to aid paper distributors in selecting better salesmen, the Sherman Paper Products Corp. reports. Inaugurated by Sherman as an aid to its distributors, the program is sponsored jointly by the company and participating distributors. The field research and developmental work will be done by Benge Associates, specialists in personnel selection.

Research will be kept on a practical level, interviewing a large number of paper salesmen in the major distribution areas, to determine what qualities characterize the successful paper salesman, E. W. Preston, Sherman industrial division sales manager, states.

Chinese Student Learning U. S. Paper Making

WISCONSIN RAPIDS, Wis. — Chang Szu Shiang, Shanghai, China, is working in the laboratories of the Consolidated Water Power & Paper Co. during the summer and is observing the various stages of paper manufacturing. He was graduated from National Chi Nan University of China, Shanghai, in 1941 and next fall will resume his studies for his master's degree in chemistry at the University of Wisconsin. He was sent to the United States by the National Resources Commission in China.



Always Specify

DIAMOND

- SODA ASH
- CAUSTIC SODA
- LIQUID CHLORINE
- SILICATE of SODA

Continental Presents 50 With Service Pins

RIDGEFIELD PARK, N. J. — Fifty-two employes of the Continental Paper Co. were presented with service pins at the company's recent annual ceremony and picnic. William J. Alford, Jr., company president, was given a pin with four diamonds, in recognition of his 35 years with the firm.

The Paper Shop Opens in Los Angeles

LOS ANGELES—Newest enterprise in the Farmers Market is The Paper Shop. It handles paper drapes, paper rugs, table covers, napkins, tally cards, place cards, gift cards, papeteries and a variety of related consumer products made of paper.

Mrs. Bernice Peterson Leaves Wisconsin Tissue

MENASHA, Wis.—Mrs. Bernice Peterson, former purchasing agent and office manager of the Wisconsin Tissue Mills, has resigned from that position to manage a women's wear shop she owns in the Hotel Merrill at Merrill, Wis.

China's Paper Imports Decline

WASHINGTON—Declining imports of paper are reported from China for 1947 compared with the previous year, and the pre-war totals.

Paper imports last year amounted to 210,429,631 pounds, compared with 242,773,762 pounds the year before.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
June 5	92.9	June 7	106.7
June 12	95.0	June 14	107.2
June 19	95.0	June 21	106.1
June 26	99.8	June 28	103.7
July 3	91.3	July 5	62.7
July 10	*63.4*	July 12	93.5

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5	Jan.	100.9
Feb.	105.9	June	106.0	Nov.	109.3	Feb.	100.3
Mar.	106.1	July	93.5	Dec.	101.5	Mar.	100.6
Apr.	105.1	Aug.	104.2			Apr.	102.5
		Sept.	102.0	Year Avg.	104.3	May	100.4
						June	*94.5*

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	93.1	96.3	87.6	87.2	87.6	99.1	103.6	*98.4*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTE: As of January 10 capacity base increased by 13.3%.

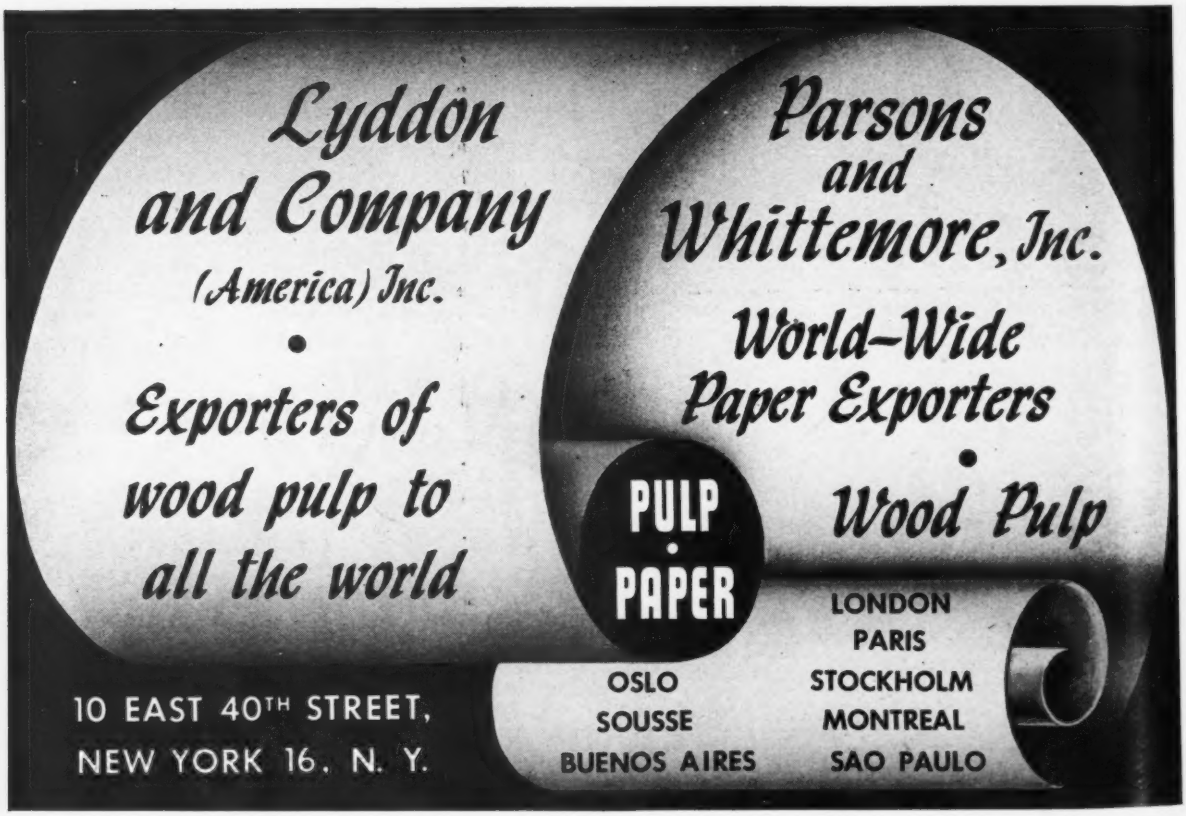
PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
June 5	87	June 7	98
June 12	101	June 14	103
June 19	97	June 21	102
June 26	97	June 28	102
July 3	89	July 5	78
July 10	*56*	July 12	76

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	100	*94*							

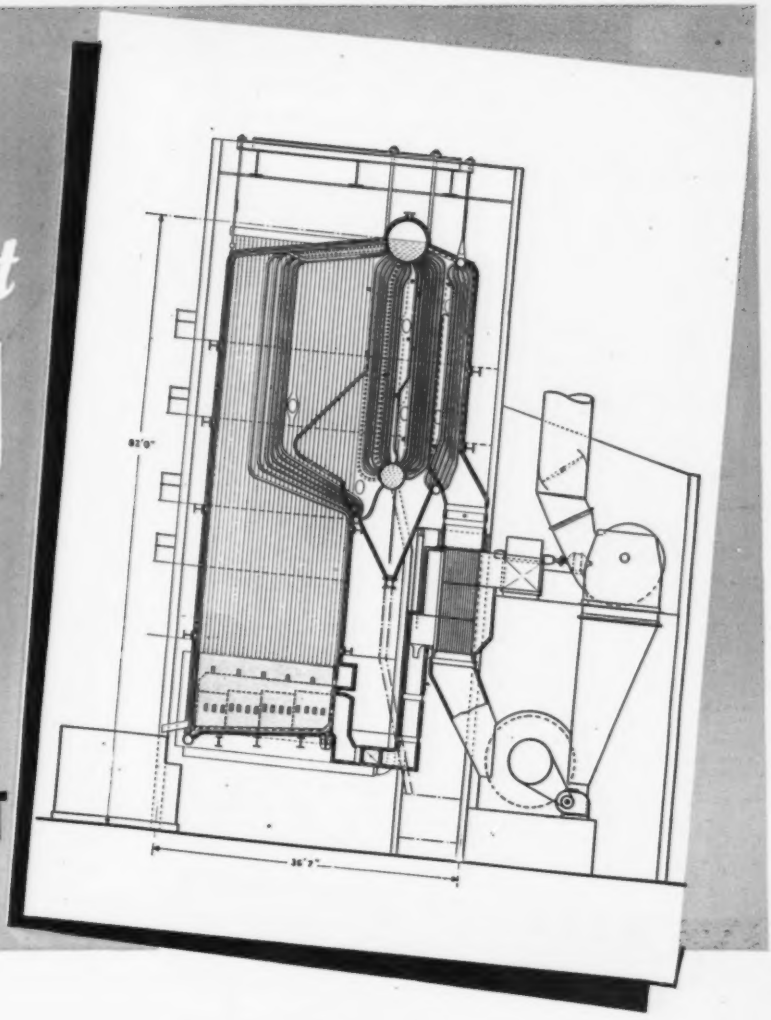
* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



New... at CALCASIEU

Louisiana Mill MODERNIZES with B&W RECOVERY UNIT



CALCASIEU PAPER COMPANY is modernizing chemical recovery facilities at its Elizabeth, La., mill with a B&W-Tomlinson Recovery Unit now on order. Having 175-ton capacity, the new unit will produce approximately 86,000 lb. of steam per hour at 200 psi.

The consulting engineer is Alvin H. Johnson & Co., Inc., New York.

Preference for this new design B&W-Tomlinson Recovery Unit, proven since the war, is a tribute to B&W's pioneer research and development work over a long period. Outstanding results today are higher steam output, lower maintenance, and automatic mechanical lancing equipment, each contributing its share to low-cost pulp production.

P-28

FOR PAPER MILLS — B&W Recovery Units . . . B&W, Integral-Furnace, Stirling, Type H Stirling and Cross-Drum Boilers . . . Boiler Components . . . Pulverizers . . . Fuel Burning Equipment . . . Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Process Equipment . . . Alloy Castings.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
WORKS: ALLIANCE AND BARBERTON, O.; AUGUSTA, GA.

Producers of

SULPHUR

Large stocks at our mines make possible prompt shipments

Uniformly high purity of 99½% or better

Free of arsenic, selenium and tellurium

TEXAS GULF SULPHUR CO. INC.

75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

Brown Recapitalization

(Continued from page 11)

Many holders of paper stocks, *The Financial Post* says, do not see much in the way of improvement in the current paper levels. Abitibi $1.50 preferred is selling around $20¼ a share, to yield about $7.40. If the new five percent Brown preferred were valued on the same basis, the new preferred equivalent to one share of old $100 par stock would only be worth about $67.50, while the 14 new common at the current market price of $4½ would be worth $57.75 or a total of $125.25. But with the amount of common being doubled, many analysts feel that the price of the common might dip below the $4 mark, particularly if many preferred holders decide to sell to obtain cash.

On the basis of 1947 earnings, if the number of common shares outstanding were increased to 4,022,421 by the plan, earnings per common share would be cut to about 52 cents. If the market placed a value on the common of six times earnings (around the average for paper securities) this would indicate a value of about three dollars a common share and would reduce the market value of the 14 common shares to $42. This would then reduce the total market value of securities given for one old preferred to $109½ a share.

As stated above, no official announcement has been made since the annual report, indicating what the company has in mind, but mere guesses and speculative thinking out loud have a way of getting into the news, and, in this case, has apparently affected the securities adversely on the stock market. Whatever type of reorganization is proposed, would appear likely to meet opposition unless it can show preferred shareholders that it is adequate meeting their total claims and includes more provision for retirement of the new securities. It would also appear likely that it could not contain any provision which would mean too heavy a dilution for common shareholders.

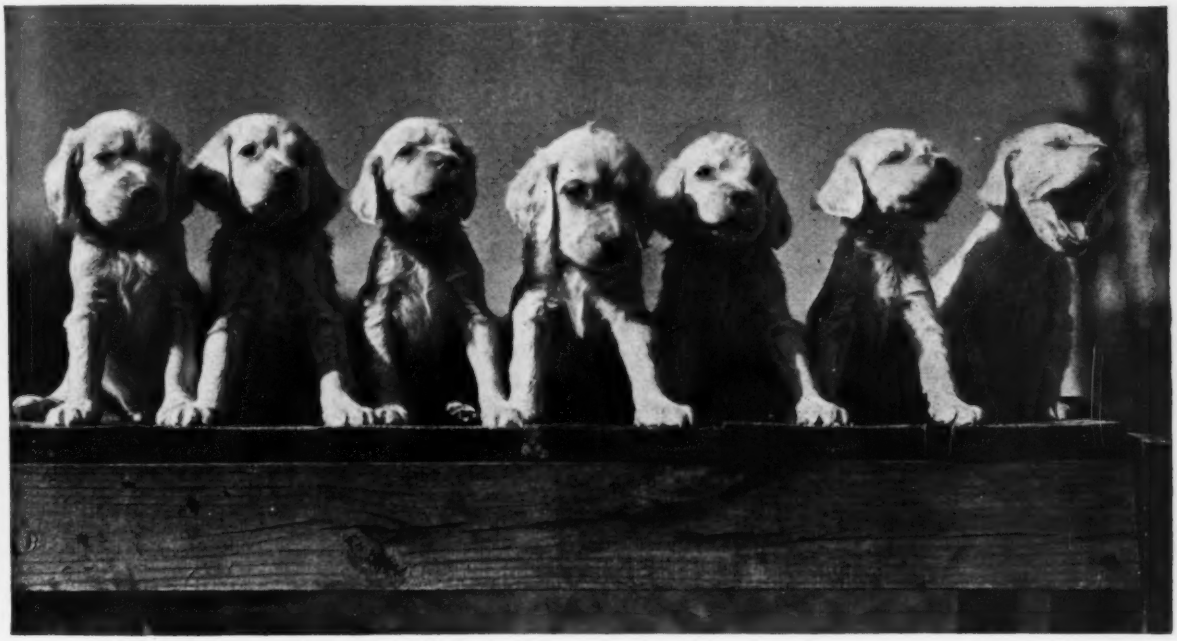
Rapid-Standard Advances Backart, Brockway, Williams

GRAND RAPIDS, Mich. — George R. Brockway has been named sales manager of the Rapid-Standard Co., Inc., materials handling equipment manufacturer, and Richard H. Williams has been named direct sales representative in Toledo, Ohio, with offices at 663 Spitzer Building. Lloyd C. Backart, formerly president and sales manager, continues as chairman of the board.

Hickey, Ramsey Advanced By Flexible Steel Lacing Co.

CHICAGO — William W. Hickey now represents the Flexible Steel Lacing Co. in the New England and New York territory. He succeeds John Ramsey, who has been transferred to the executive sales office in Chicago. The firm manufactures steel belt lacing, V-belt fasteners, belt cutters, belt tools, etc.

UNIFORMITY



"BEST IN ITS CLASS" for uniformity is Wyandotte Precipitated Calcium Carbonate.

Made of pure, carefully processed ingredients, this highly refined paper-coating pigment is unsurpassed in smoothness . . . in brightness and freedom from grit and abrasiveness . . . in hiding power and ink absorption.

In the production of high-grade coated finishes—at the speed demanded by modern conditions—many paper manufacturers rely on Wyandotte Precipitated Calcium Carbonate to meet their most exacting requirements.

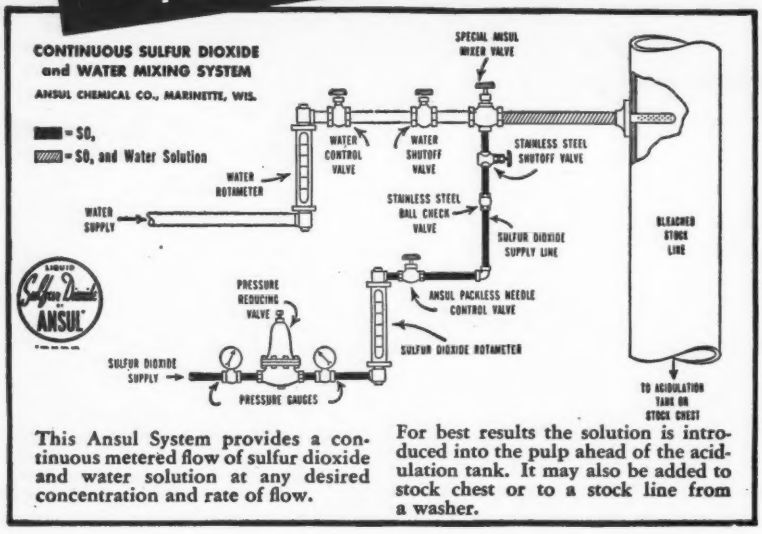
If quality coating is a consideration in your plans, we suggest you look into the advantages of this truly fine chemical. May we furnish you with technical data?

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine • Hydrogen • Dry Ice • Glycols
Ethylene Dichloride • Propylene Dichloride • Chloroethers • Aromatic Sulfonic Acid Derivatives • Other Organic and Inorganic Chemicals

Wyandotte
REG. U. S. PAT. OFF.

COLOR REVERSION TROUBLE . . ?
STABILIZE MAXIMUM
Brightness
IN BLEACHED KRAFT PULP
with an
ANSUL SULFUR DIOXIDE
"POSITIVE CONTROL" SYSTEM



This Ansul System provides a continuous metered flow of sulfur dioxide and water solution at any desired concentration and rate of flow.

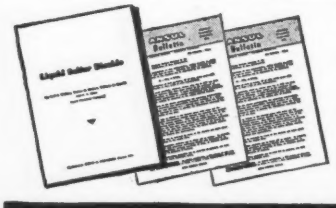
For best results the solution is introduced into the pulp ahead of the acidulation tank. It may also be added to stock chest or to a stock line from a washer.

Ansul Sulfur Dioxide is an inexpensive acidifying agent . . . thoroughly efficient and perfectly suited to the acidulation step in the preparation of bleached kraft pulp. The Ansul Concentration System provides for POSITIVE CONTROL OF ACIDULATION.

Ansul Sulfur Dioxide brightens the pulp and prevents color reversion across the paper machine and in storage because it:

1. Reduces colored ferric compounds to the soluble ferrous state so they may be easily washed from the pulp.
2. Brightens the pulp by adjusting the pH to the desired concentration.
3. As an anti-chlor, removes residual chlorine thus preventing the formation of oxy-cellulose compounds which, on aging, results in discoloration of the finished product.
4. Enables organic lime compounds to be removed by washing.

WRITE THE ANSUL TECHNICAL STAFF FOR FURTHER INFORMATION



Write today for these bulletins:

"A Method for Continually Preparing Sulfur Dioxide Solutions."

"Use of Sulfur Dioxide for Acidulation of Bleached Kraft Pulp."

Also, send for your copy of: "Liquid Sulfur Dioxide."

ANSUL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION, MARINETTE, WIS.
60 E. 42nd St., New York — 535 Chestnut St., Philadelphia

Automatic Transportation Co. Opens Newark Facilities

CHICAGO — Organization of J. M. Barclay, Inc., Newark, N. J., as sales representative in New Jersey north of Trenton for the Automatic Transportation Co., materials handling equipment manufacturer, was reported to PAPER TRADE JOURNAL by Elmer F. Twyman, general manager of Automatic. The new firm, of which J. M. "Ted" Barclay is president, opened at 397 Market Street, Newark, on July 15. Mr. Barclay's staff of eight includes Howard Underwood, in charge of repair, service, and the department of surveys, as secretary; Paul Gilbert; Dan Rossi; and Charles Lydecker.

Pennsalt's Steele Resigns

NEW YORK—Ben P. Steele reports to PAPER TRADE JOURNAL his resignation from the Pennsalt Mfg. Co., effective July 31. For many years Mr. Steele was in the Philadelphia office supervising sales of caustic soda, chlorine and other chemicals. During the past year he has been in the New York offices, engaged in company export activities. He states that he will disclose his future plans shortly.

Edwin C. Shaw New Perfecting Service Co. Head

CHICAGO — Perfecting Service Co., 6140 Cottage Grove Avenue, has elected Edwin C. Shaw as president, succeeding V. L. Shaw, retired. The company manufactures a rotary union equipped with ball bearings, for the introduction of steam or coolants into revolving cylinders or drums of paper mill and other process machinery.

Demonstration Run of Paper From Wheat Straw

CLEVELAND—"We expect to produce ten tons of paper from wheat straw by our process at a paper mill in Holyoke, Mass., late in July," H. L. Kinsley, president of the Kinsley Paper Co., told PAPER TRADE JOURNAL on July 14. "When this run is completed, we will furnish complete technical data and cost features," Mr. Kinsley added.

G. E. Ups Smiddy

PITTSFIELD, Mass. — Harold F. Smiddy has been appointed general manager of the chemical department of the General Electric Co. Mr. Smiddy, who will make his headquarters here, has been on President Charles E. Wilson's staff since March. From 1943 until he joined G.E., he was a partner in Booz, Allen & Hamilton, industrial consultant.

Hardinge Names Shank Advertising Manager

YORK, Pa. — William H. Shank has been named advertising manager of the Hardinge Co., Inc., succeeding R. C. Ferguson, who is now north central district manager, President Harlowe Hardinge reports.

How the Kidder Aniliner Improves Printing Quality While Reducing Costs

It's Rugged-Fast-Easily Controlled-Makes a Perfect "Kiss"

Massively built . . . yet with its great weight properly machined, distributed and balanced . . . the Aniliner runs vibration-free at *high speeds*. And its simple, accessible controls regulate so closely as to achieve the perfect "Kiss" impression that is a necessity for fine aniline printing.

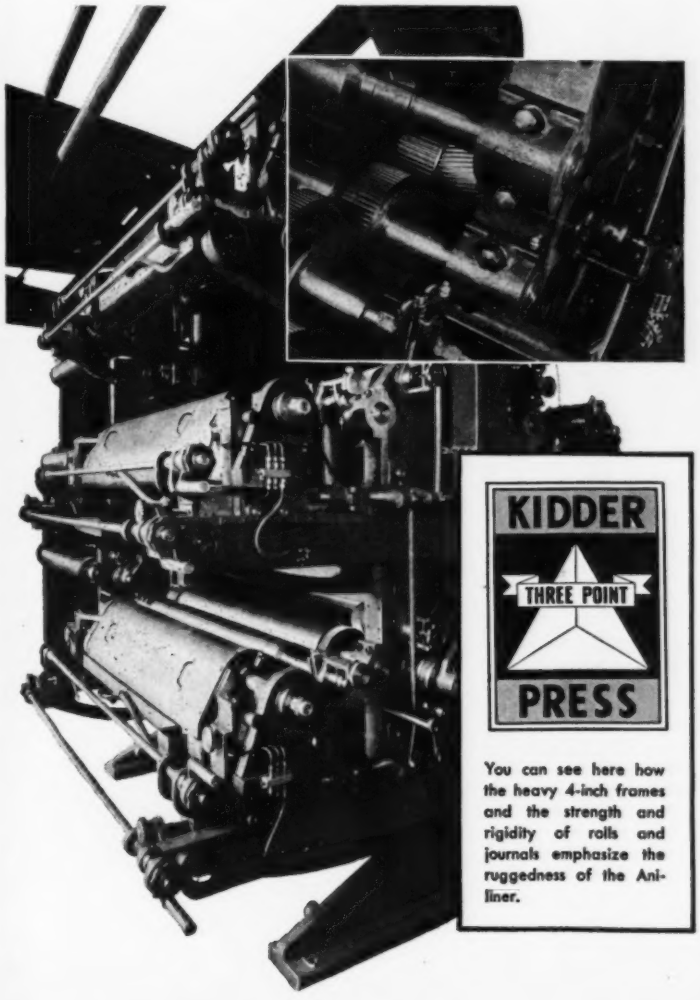
This sturdy American design, created out of the need for such a press, can run continuously at speeds that promise high quality printing, low cost and low maintenance.

KIDDER PRESS COMPANY, INC.

DOVER, NEW HAMPSHIRE

A. E. MARCONETTI
11 W. 42nd St., New York 18, New York

MACHINERY SERVICE CO.
P. O. Box 33, Los Angeles 11, California



You can see here how the heavy 4-inch frames and the strength and rigidity of rolls and journals emphasize the ruggedness of the Aniliner.

The Aniliner is a "Three-Point Press"

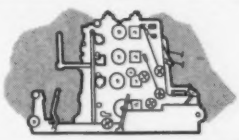
Kidder Three-Point Presses are so-called because they fulfill the three major requirements for perfect printing. See how these features win for the Aniliner a place in this famous family.

CONTROL OVER THE PAPER • Mill roll and paper in-feed control • Web on continuous arc travels paper steadily • Outfeed and Constant Tension Rewind.

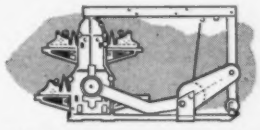
PROPER DISTRIBUTION OF INK • Non-Splash Fountains • Deflection-free Fountain Rolls • Accurate setting of fountain and inking roller contact • Precision adjustment of inking roll against plates • Pressure releases during stops • Inking rolls rotate independently during stops.

ACCURACY OF THE IMPRESSION • Rugged concentric plate and impression rolls • Precision adjustment of plate-to-web contact • Plate Cylinders lift during shutdown without upsetting adjustment or register.

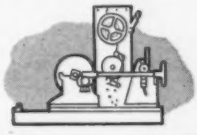
The Kidder Aniliner Bulletin will show you opportunities for high-quality, low-cost Aniline Printing, and describes in detail the latest improvements in these presses. Write for it — no obligation of course.



MULTI-COLOR LETTER PRESSES
for waxed paper, box wrappers, etc., rewound or sheet-delivered — up to 72 inches.



"ANILINER" and "CELLOPRINTER" MULTI-COLOR PRESSES
for decorative papers, cellophane, glassine, etc., — up to 65 inches.



SLITTERS AND REWINDERS
for paper mills, finishing rooms, and small-roll, high-speed slitting — up to 115 inches.

1. FOR THE MONEY As a base material for making fine cotton content paper, Rayco is your best buy in linter cotton.

2. FOR THE SHOW You can *see* the difference in quality between clean, carefully graded and inspected Rayco and ordinary linter cotton.

3. TO MAKE READY Rayco requires no rag room operations because it comes to you free of impurities, dyes, synthetics, knots and weavings.

4. TO GO Cooker-ready Rayco can help you speed production and lower costs. Get in touch with us. A Railway specialist will gladly visit your plant and show you how and why Rayco Linter Cotton makes fine cotton content paper.

The RAILWAY SUPPLY & MFG. CO. and Affiliates

Specialists in Grading, Marketing and Processing Cotton Fibers

General Offices: CINCINNATI, OHIO

New York • Chicago • Memphis • Dallas Detroit • Atlanta • Charlotte

RAYCO LINTER COTTON

OBITUARY

George Chapin Watson

George Chapin Watson, 67, president and treasurer of the Franklin Paper Co., Holyoke, Mass., died at his home on July 16, following a heart attack suffered about a month ago. Mr. Watson in 1935 purchased Perkins Tissue, Ltd., a branch of the American Tissue Co., and conducted the company until he sold the business in 1947. He divided his time during the 12 years between his business interests in Holyoke and Montreal. Surviving Mr. Watson are his widow and two daughters: Mrs. Sidney Whiting, Jr., of Holyoke, and Mrs. Keith F. Fletcher of Springfield, Mass.

Frank G. Wederholt

Frank G. Wederholt, 33, office manager and secretary of the Jay Madden Corp., and of its associate, Madden, Reeve, Angel & Co., both of New York City, died on July 4 in the collision of a Swedish airliner and a Royal Air Force transport over London, England, when 39 persons lost their lives.

Mr. Wederholt, upon graduating from Pace Institute in June, 1935, joined the Jay Madden Corp. as an assistant to Frank Jepson, then secretary and now vice-president and director of the company which is sole sales agent in the United States for all paper and board mills in Finland.

In 1936 he was made head bookkeeper and traffic manager, serving in that capacity until July, 1941, when shipments of pulp and paper were cut off by the war, whereupon he was transferred by John Coffin, president of the firm to the Iroquois Paper Co., at Thomson, N. Y., where he was office manager and head bookkeeper until January, 1942. At that time the mill was purchased by the Container Corp. of America, and Mr. Wederholt was retained in the same capacity by the new owner, later being transferred to the plant at Manayunk, Philadelphia, to take charge of accounting.

In 1942 Mr. Wederholt volunteered for Army Service. He was inducted as a private in the Air Corps and was discharged honorably from the Army in 1945 with the rank of First Lieutenant.

When he returned to civilian life in May 1946, the Jay Madden Corp. has reestablished its connections with Finland and he once more resumed his duties with that firm as office manager and Secretary.

During the past two years Mr. Wederholt had been active in the sales end of the business, and to gain broader knowledge of the paper business, and to become better acquainted with the people in Finland, he made a business trip to Finland this Spring. He had completed his business on June 29 and departed for London via Stockholm and Copenhagen. He was to have spent several days in London before sailing for New York on the S.S. Washington, leaving Southampton July 9. The only part of his trip scheduled by air was the fateful flight from Copenhagen to London on July 4. Mr. Wederholt, on his return to New York, was to have entered more actively into the sales end of the newsprint activities.

The London Agents for the Finnish Paper Mills' Ass'n., Legge, Angel, Murrant & Corke, Ltd., handled the arrangements on behalf of the Jay Madden Corp. for the return via air of Mr. Wederholt's remains to his family in Forest Hills for burial.

Funeral services were held at Our Lady of Mercy Roman Catholic Church, Forest Hills, Queens, on July 19. Surviving Mr. Wederholt are his widow, Mrs. Teresa Kerwin Wederholt, and a daughter, Anita.

Trends

(Continued from page 24)

our pulp buying mills," the report concludes.

Trading in chemical wood pulp in the New York area is reported dull as a result of midyear vacations and shutdowns. Kraft continues in sufficient supply, bleached sulphate, bleached sulphite and unbleached sulphite are not too plentiful. Prices are steady with no general advances expected in third-quarter contracts. One producer, however, announced a $10 per ton advance in Canadian unbleached and bleached sulphate, effective July 1, making his prices $150 and $160 a ton respectively.

Indexes

Index of general business activity for the week ended July 10 rose to 147.8 from 141.8 in the preceding week, compared with 130.5 for the corresponding week of 1947.

Index of paperboard production fell to 134.2 from 168.9 in the preceding week, compared with 147.8 for the corresponding week of 1947.

Comparative index for paper and paper board production as reported by AP&PA are shown below:

	July 10 1948	July 3 1948	July 12 1947	July 13 1946	July 14 1945
Paper*	63.4	91.3	93.5	95.2	88.5
Paperboard ..	56.0	89.0	76.0	87.0	90.0

* Tonnage production was 23.2% less than last year due to the effect of the Fourth of July holiday which fell in the week ending July 10 this year, while last year it was included in the prior week.

Paperboard Production Statistics

	For Weeks Ended July 10 1948	July 3 1948	July 12 1947
Production	108,114	171,583	133,950
New Orders	123,790	215,857	139,288
Unfilled Orders .	393,915	381,065	505,183
Percent of Activity—Current	56%		

INDUSTRIAL DEVELOPMENT

Correcting Some Flat Screen Problems

By Donald L. Calkins, Wausau Paper Mills, Wasau, Wis.

The purpose of this paper is to relate the actual experience one mill had in the solution of some rather common flat screen problems. I will enumerate some screen room ailments that the mill had and then explain what was done to cure these ailments.

Their screening problems can be classed into three separate groups, listed in the order of their importance as follows: (1.) Dirt, (2.) Capacity, and (3.) High operating cost. These are rather broad terms and I think you will agree that they require further elaboration.

The word dirt, when used in connection with pulp and paper products, is a term familiar to all of you. Yet to say that pulp is clean or dirty without stating the relative amounts of foreign materials present is not necessarily conclusive. However, the quoting of actual dirt count figures may provoke a discussion on the controversial subject of dirt evaluation which is not within the scope of this paper. Therefore, I will take the liberty of making the statement that their pulp after screening was dirty.

The second item listed was capacity, and it too requires further explanation. Like many others this mill had continually increased its pulp producing capacity during the early war years. However, no changes had been made nor new equipment had been added to the screening system ,and it began to be a bottleneck against any further increases in production. Physical mill limitations made it impractical, if not impossible, to install additional screening equipment.

The high screen room operating costs mentioned were the result of several different factors. Because the screens were operated at full capacity, a shut down was required for all wash-ups and repair work. Sometimes these shut-downs resulted in a loss of production, but more frequently they meant that the non-productive repair or clean-up work was being done at the high Sunday wage rate.

Because the equipment was old and was being operated at full capacity, the repair costs were excessive. The screen plate life under the operating conditions was short, and replacement was frequent and costly. Although it was not fully realized at the time, the power cost per ton of pulp screened was also high. All of these factors contributed to the high operating cost.

Certainly, dirt, inadequate capacity, and high operating costs are problems that are familiar to all of you. These same problems are quite likely to show up in any screen room where production is increased and little or no new equipment is added.

Now I would like to take a moment to discuss the method this mill used to do their screening work, and what equipment they had to do it with. In order to fully understand the problems and the changes made, it is necessary to have a picture of their operating conditions, equipment used, and some of the other limiting factors involved. Their system of pulp cleaning was operated in four steps as follows: (1.) Knot Screening, (2.) Riffling, (3.) Primary Screening, and (4.) Secondary Screening.

The knotting was being done on two fourteen plate flat screens arranged in a single row and equipped with coarse cut screen plates. The stock was turbulently poured onto the head end of the line from a box above the screens, and dilution was accomplished by means of showers located above the stock flow.

A riffler was being used that was of little or no value as a dirt removing piece of equipment at the existing tonnage rate. It was deep and narrow and the stock traveled through it at such a high velocity that only the very heavy foreign materials could settle to the bottom.

Primary screening was being done on six parallel rows of flat screens consisting of three twelve plate units, or thirty-six plates, per row. Here again, as in the case of the knot screens, the stock was poured onto the first few plates with a great real of turbulence. The dilution water was added from showers located above the screen plates. Because of the line lengths, it was difficult to keep the last plates from running dry. When this would happen, the dirt would pound through the screen plate slots and get into the accepted stock. The screens themselves were of the old cam and toe block design, which I am sure all of you have used at some time or another. The construction up to the diaphragm was metal, and the diaphragm chambers, flow boxes, screen vats, etc., were all made of wood. Diaphragm chamber outlets were cast integral with the screen frames, and were directly connected to the accepted stock flow boxes. Generally speaking, the metal parts of the screens were in fair condition, but the wooden superstructures were badly deteriorated.

The conditions of operation and of equipment on the secondary, or tailing screens, was about the same as on the primary screens. This step was being done on a single line consisting of two twelve plate units. The accepted stock from the first part of the line was being mixed with the accepted stock from the primary

A paper read at the Spring meeting of the Northwestern Division of the American Pulp & Paper Mill Superintendents Ass'n., at Hotel Beaumont, Green Bay, Wis., June 19, 1948.

INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

screens, and that which passed through the lower plates was being rescreened.

This should give you a fair picture of the problems, equipment, and operating difficulties that existed previous to any remodeling. Perhaps some of these conditions are much too familiar to some of you mill men.

The program that was undertaken to correct these problems and conditions was divided into the same four parts as the cleaning system itself: knotting, riffling, primary screening, and secondary screening.

Since it is the intention that this paper cover flat screens and not entire screening systems, I will not go into great detail on the knotting and riffling steps, but will only mention them briefly.

A new consistency control unit and two knotter screens of the vibrating type were installed in place of the existing flat type of knot screens. The riffler was replaced with five new units, each eight feet wide, with felt lined bottoms. In the riffler installation, capacity enough was provided so that one unit could be shut down and cleaned or repaired, without loss of production.

In remodeling the primary screens, one line was taken at a time and there was little or no loss of pulp production during the construction period. The changes on the knotters, rifflers, and secondary screens had all been completed before work was started on the primary units, so the dirt problem did not get any worse than it had been.

All of the wooden work on the screens was removed, and the necessary repairs to cams, toe blocks, bearings, etc., were made. Then the screens were reset, using only two 12 plate units, or a total of twenty-four plates, for each line. In resetting, a space was left between the existing wall and the head end of the first screen, and between the two screens themselves.

At the entrance end of each line of screens, a head box with an apron board was installed. Its purpose was to level off the flow before it reached the first screen plate, and to make that flow laminar in nature. The box was designed so that the stock entrance was below the point of discharge, and it had two verticle baffles in it. Since the last pass in the box is a rising one, it has a tendency to float the large dimension speck materials. With the dirt at the top of the stream, the slot sizes of the first few plates can be greatly increased to give greater screening capacity, without fear of increasing the dirt count.

After the pulp has passed over the first twelve plates, it has been reduced somewhat in volume, and the consistency has been increased. With this in mind, a dilution well with an apron board was installed between the two screens. This dilution well is nothing more than a pit or recess below the screen plate line, and all of the dilution water is added from the bottom of the stream. The addition of water in this manner has a tendency to lift the speck material to the surface, the same as at the head box. The apron then levels off the flow before it reaches the thirteenth screen plate.

During normal operation, the stock entering the screens, plus the dilution water added at the dilution well, is volume enough so that a stream passes over the twenty-fourth or last screen plate in the line. This prevents any drying up and pounding on the screen plates. The stock which flows over the tail end is not lost because it is sent to the secondary units for further stock selection.

Before rebuilding, the screens had diaphram chambers for each pair of plates that were about nine inches deep, and each chamber had an outlet that was from twenty to thirty square inches in area. The depth was reduced to a little over six inches in the remodeling. Since the chamber outlets were an integral part of the screen frames, and could not be made larger, it was necessary to block them off entirely. New outlets were cut out through the sides of the chambers, and they were made twice as large, or sixty square inches in area.

Oblong metal castings in the shape of a reverse curve were then connected to the outlets, so that the point of discharge was approximately twenty inches below the top of the screen plates. The cross sectional area of these metal conductors was maintained at sixty square inches. The lower ends of these reverse curve castings were conected to the bottom of a collecting flume with individual seal chambers for each pair of plates built into it. These seal chambers were nothing more than rectangular compartments having a horizontal cross sectional area of one hundred square inches. A dirt trap was provided at the bottom below the stock entrance, and a dam built up almost to the top of the chamber established the point of discharge. The tops of the dams were built up of thin strips, and once the stock level for proper operation was determined, the dams were fixed. During operation the stock discharges over these dams in to a common flume, and then to accepted stock storage. Because there is no adjustment of the dams required, the collecting flumes were covered with a tight fitting, but removable cover.

The drives on the old installation consisted of one motor for each two rows of screens, and transmission was through "V" belts to the first line, with a flat belt driving from there to the second line. It had been proved that this was a difficult set up to work around, and was not flexible enough, because a single line of screens could not be shut down. The drives were changed to individual direct connected gear motor with shock absorbing couplings between the gears and the first screens. This change provided greater flexibility, and a great deal more room.

The secondary screens were installed in two lines of twenty-four plates each. One line was adequate for the necessary capacity, but a second line was provided to give greater flexibility of operation. These screens were built in the same manner as the primary screens, except for a change in the accepted stock flow box. It is desirable to operate dry plates at the tail end of secondary screens, so that stock losses can be held to a minimum. To do this, a removable dam was put in the flow box, so that the stock which passes through the dried up plates can be separated from that which comes from completely submerged plates. In operation, the stock passing through the wet plates is accepted, and that which comes through the dried up plates is sent back to the head of the line for rescreening.

When the rebuilding program that this particular mill undertook was completed, all of their original problems and difficult operating conditions were partially or completely satisfied. The results can best be summarized by reviewing the original problems mentioned previously in this paper.

The dirt in the screened pulp was very substantially reduced, and was no longer a serious problem.

A combination of several factors increased the capacity of the screening system very materially. Larger chamber outlets, proper delivery of stock to the first few plates, the use of larger slot sizes, and the use of some

stainless steel plates all contributed to this increase. Where it had been difficult to operate at an eighty ton per day rate before, it is now possible to screen at one hundred and ten ton per day rate on five of the six lines of screens. Perhaps a little better comparison of this capacity increase would be to mention that it previously required two hundred and sixteen primary screen plates to screen eighty tons, and it now requires only one hundred and twenty primary plates to screen one hundred and ten tons. This increased capacity allows the screen room to do their wash-up and repair work during operations, and without a slowdown of production.

There has not been enough experience as yet to conclusively prove that there will be a great reduction in screen plate replacement and repair costs. However, both of these are indicated so far. Screen plate life on the first screens that were completed is as long as it was previously, and since there are fewer plates, it would seem to indicate that the cost will be less over a period of time. Repair costs are, of course, quite low at the present time, because all of the equipment is new or has been recently rebuilt.

No exact figures are available on power costs either, but here again, a reduction is indicated. Now, during normal operation, only sixty primary diaphragms are being pumped, and each has only about five inches of water above it, while before there was a normal of one hundred and eight primary diaphragms being pumped, each with about eight inches of water above it.

These several factors, screen plate replacement, repair costs, power consumption, and wash-ups during normal operating hours, seem to indicate that there will be a permanent reduction in operating costs.

Figure 2.—Goodyear V-belt developed for portable power saws is used on this Kut-Kwick saw in pulpwood felling operations in Georgia. The saw also can be operated vertically to cut felled logs. The belt is designed to withstand severe strain inflicted when the saw operates in a quarter-turn position.

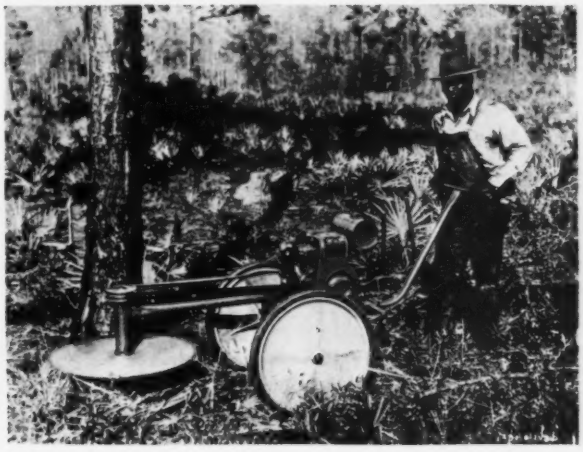


Figure 2.—Kut-Kwick portable power saw bucking a log in Georgia pulpwood operations. The multi V-belt drive, powered by a small gasoline engine, was developed by the Goodyear Tire & Rubber Co. for strenuous field usage. The saw also is operated horizontally to hew trees and scrub growth.

Pulpwood Saw V-Belt Improves Performance of Portable Power Saws

A V-belt, designed especially for portable power saws used in pulpwood felling operations and in clearing underbrush, has been developed by the mechanical goods division, of the Goodyear Tire & Rubber Co., Akron, O.

Called the Pulpwood Saw V-belt, the new product has been tested by manufacturers and users of power saws, and it is claimed that results indicate an operating life up to 100 per cent longer than conventional belts.

On the latest type portable saws the blade can be operated either horizontally to hew trees and clear brush close to the ground, or vertically to cut the felled logs. Consequently, the multi V-belt drive, powered by a small gasoline engine mounted on a rubber-tired cart, must operate at times in quarter-turn position, throwing added strain on the belts.

Previously, according to J. F. Taylor, manager of Goodyear's X-belt department, even the best standard belts gave only a few weeks' maximum service under such strenuous usage. Mr. Taylor explained that twigs and branches are frequently caught in the drive and whipped into the pulleys, causing ordinary belts to snap and jump the sheaves.

Mr. Taylor said the belt is sinewed with the highest tensile rayon cord with sufficient "give" to carry all but the heaviest brush through the pulleys without breaking. Another improvement, he said, is that the belt has a wear-resisting envelope, and the high-tension load carrying members are designed to withstand severe friction heat and shock.

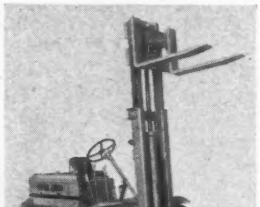
EQUIPMENT AND SUPPLIES

Bowser Centrifugal Pumps

Bowser Centrifugal Pumps have been added to the line of Bowser control equipment for the handling of most liquids. Available in a wide range of capacities and heads. For details and prices write to Fred S. Ehrman, general sales manager, Bowser, Inc., Fort Wayne 2, Ind.

Clark 60" Yardlift

The Yardlift 60", of 6,000-lbs. capacity, completes the series of pneumatic-tired machines designed specifically for outdoor handling operations and for smooth movement of unit loads over rough, uneven, slippery surfaces.



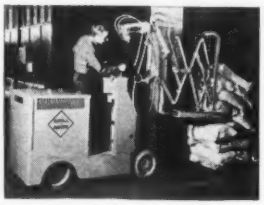
Design and construction include frame of heavy rolled steel cross-braced and welded into an integral unit, specially designed 6-cylinder engine of 50 h.p., pivoted steering axle mounting with 3-point suspension, heavy-duty full-floating driving axle with heavy housing and dual drive wheels, double reduction steering mechanism, pneumatic-cushioned adjustable seat with upholstered backrest, all parts readily accessible for servicing. Standard lift is 112" with overall height of 85". For details and prices write to Clark Equipment Co., Industrial Truck Div., Battle Creek, Mich.

Semisol

Semisol is a bone glue shipped from the factory in semi-solid form in steel containers. It is a jelly at room temperature but when warmed to usual operating temperatures becomes fluid. Usual temperatures are from 110° to 125° F. Dilution required may be from 0 to 100 percent. This feature eliminates the need for glue-converting equipment. Freezing does not damage Semisol, the maker states, although after freezing, if water separation occurs it will have to be reincorporated. The product is protected against spoilage due to molds or bacteria so that storage of normal future needs is possible without any unusual precautions. Semisol is used for paper making, pulp recovery, gummed tape, bookbinding, boxes, tubes and other paper uses. For details and prices write to Swift & Co., Union Stock Yards, Chicago 9, Ill.

Power Truck Pallet Retriever

The Power Truck Pallet Retriever consists of a pallet retriever attached to a standard fork-type truck which permits the fast loading of freight cars with pallets, yet retains them in the owner's possession. The Retriever



is described as a light and compact accessory attached to the forward end of the truck. The load-handling or stabilizing mechanism consists of two hydraulically actuated pantagraph rams terminating in a screen frame which remains in fixed position with respect to the load. Rams are self-adjusting to fit and follow the contour and vertical, or lateral, motion of the load while the truck backs away and withdraws the pallet. It is stated that no part of the mechanism at any height of lift projects across the entrance to or exit from the driver's station, a new safety feature. For details and prices write to Elwell-Parker Electric Co., 4223 St. Clair avenue, Cleveland, Ohio.

Cementing Endless Belts

Cementing endless leather belts either for installation or take-up is speeded up by the use of a special cement and accessory equipment. Manufacturer states that the process—tested during three years of experimentation and application—makes it possible to take up an endless belt during a washdown or other minor interruption within the hour. For details and prices write to Alexander Bros., 406 North Third Street, Philadelphia 23, Pa.

Highflex Air Hose

Highflex is an air hose for small tools which weigh less than half as much as ordinary hose used in this service, is as flexible as a lamp cord, and is red-covered for visibility. In the ¼" size, the hose weighs 8.8 lbs. per 100 feet. Working pressures are up to 250 p.s.i. Hose braid is designed for strength at the angle of maximum stress, and the tube and braid for minimum expansion under pressure. For details and prices write to B. F. Goodrich Co., Akron, Ohio. CUT

Gray Metal Plug For Paper Rolls

The Gray metal plug for paper rolls is a substantial metal stamping finished with baked on phenolic lacquer to make for easier insertion into the roll. It is clean and has no rough surfaces to injure the hands when the plug is in-

serted in the roll or when the plugged roll is handled in transit or on the press or slitter. The Gray plug is currently available in sizes from 2½ inches to 3½ inches. The maker promises "dependable delivery" on these. Other sizes will be available later. For details and prices, write to Gray Stamping & Mfg. Co., Plano, Ill.

NEW LITERATURE

Allis-Chalmers Mfg. Co., Milwaukee 1, Wis. Bulletin, "Handy Guide for Quick Selection of Electric Motors." Provides detailed specifications covering squirrel-cage induction motors and application data, range of sizes and speed torque curves on synchronous, wound rotor and d-c motors. Covers applications and features of gearmotors and multi-speed induction motors, and carries an induction motor selection chart for units from one to 200 h.p.

Byron Jackson Co., Pump Div., Box 2017, Terminal Annex, Los Angeles 54, Calif. Bulletin, "BJ Centrifugal Pumps." Illustrates and describes new pumps for pulp and paper industry.

General Dyestuff Corp., 435 Hudson Street, New York 14, N. Y. Circulars, "G-527, Corikal B High Conc," and "GDC-294, Puratized SC For Slime Control In Paper Mills."

Jeffrey Mfg. Co., Columbus 16, Ohio. Catalog, "Swing Hammer Shredders." Covers complete line of shredding machinery. Complete with installation views showing how units serve various industries on diversified line of products.

Witco Chemical Co., 295 Madison Avenue, New York 17, N. Y. "Carbon Black Chart." Covers competitive grades of rubber blacks and color blacks.

SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Hydraulic Mounting Technique for Roller Bearings*

By A. Stewart Murray[1]

Abstract

In the process of developing a rigid coupling that was adequate, removable, and practical, an oil injection method was developed that greatly simplified the making and breaking of heavy interference fits. The application of this technique to mounting and dismounting roller bearings has resulted in very interesting laboratory studies, and the first installations indicate its routine practice will be of major assistance to all companies using equipment incorporating large ball and roller bearings.

The SKF oil injection method for the mounting and dismounting of large roller bearings is the by-product of solving another problem. Marine lineshafting that transmit propulsion torque to the propellers are rigidly connected, and the application of roller bearings to such shafting requires removable couplings. The development of a practical and adequate removable rigid coupling was accomplished to facilitate the application of spherical roller bearings to marine lineshafting. The data and experience with bearing mountings, accumulated since the development of the rigid coupling, are now being made available to all users of antifriction bearings. This information is of particular importance and usefulness to those users of industrial equipment that incorporate large bearings. The paper industry has many of their machines equipped with tapered bore spherical roller bearings and this is particularly fortunate for the individual companies, as will become evident before the end of this paper.

Basic Theory

The oil injection method is based on the fact that friction between contact surfaces of a pressure joint, during assembly and disassembly, can be almost entirely eliminated through the injection of oil under pressures of 5,000 to 30,000 p.s.i., the required intensity varying with specific pieces and their respective functions. Experiments have shown that by this use of oil, friction between contact surfaces can be reduced to 1 to 2%, and less, of that which would otherwise prevail. Before considering the manner in which this method is used in practical applications, a review of its principle and theory is a helpful preliminary towards a complete understanding.

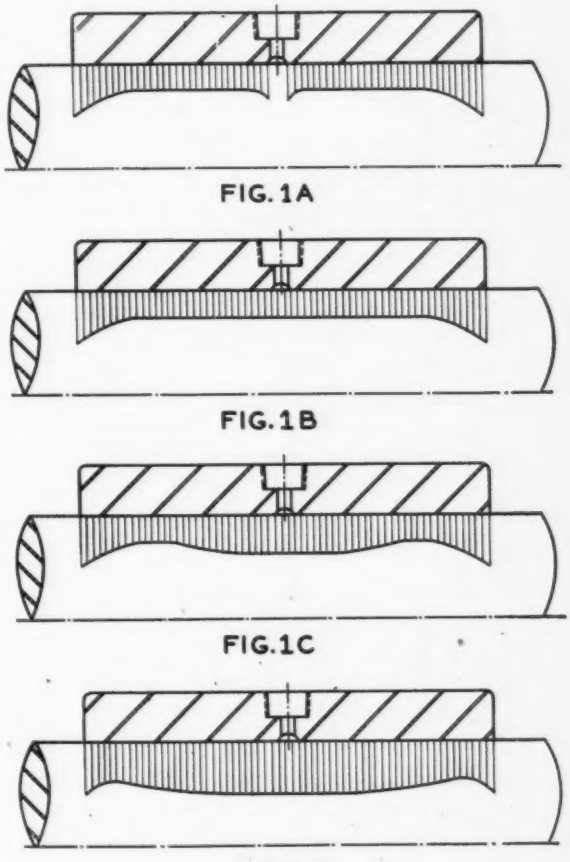


FIG. 1A

FIG. 1B

FIG. 1C

FIG. 1D

Fig. 1
Influence of Oil Injection on Shrink Fit Contact Pressures.

Figure 1 shows a heavy sleeve with a shallow oil groove in the center of its bore. Through a single

* Presented at the Second Engineering Conference sponsored by the Technical Association of the Pulp and Paper Industry, held at The Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.

[1] Assistant Chief Engineer, SKF Industries, Inc., Philadelphia, Pa.

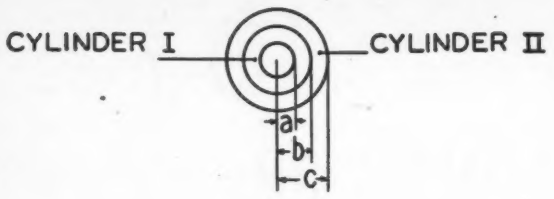


Fig. 2
Cylinder Interference Fit.

radial hole connecting the groove to a tapped hole in the outer surface of the ring, it is possible to feed oil into the ring bore. When this ring is shrunk on a shaft such that an interference fit results, the pressure along the length of contact is not a constant. The pressure variation from end to end is indicated schematically by the varying heights of the ordinates in the shaded areas. The longer ordinates shown at each end of the sleeve and at the edges of the oil groove, represent the higher contact pressures existing at these locations. This phenomenon, known as "edge loading," is caused by the edge of a ring compressing the shaft material opposite the edge and also that adjacent, but beyond.

Figure 1-A shows pressure distribution along the entire length of contact before the introduction of oil under pressure. Figure 1-B shows the condition after some oil has been introduced and the oil pressure has reached the same value as the average specific pressure prevailing in the joint adjacent to the oil groove. As the pressure is increased by the introduction of more oil, the contacting surfaces are forced apart as in 1-C and the oil commences to flow into the more distant parts of the joint. In the final condition, as shown in 1-D, a thin oil film separates the contact surfaces completely with the exception of a narrow zone at each end of the ring. There the contact pressure is greater than at any other part of the joint, due to the influence of the shaft material beyond the ends of the ring. This phenomenon, which many know as edge loading and others refer to as "end effect," is the condition that allows the oil film method to work. The end zones act as oil locks, which retain oil until the pressure rises sufficiently to further expand the ring, and an oil film completely separates all parts and prevents any important metallic contact.

The contact pressure that exists between two parts, in which the bore of the outer piece is smaller than the outside diameter of the inner piece, may be calculated with reasonable accuracy. This pressure and the stresses produced by it are a function of the interference which in turn is affected by the manner in which the two parts are assembled. The shrinking of a heated outer piece onto an inner piece causes no reduction in the amount of measured interference such as occurs with assembly by cold pressing and the inevitable shearing off of metal. The resultant contact pressure after cooling is more precisely described as the shrink fit pressure. The magnitude of the shrink fit pressure can be calculated according to a formula dealing with thick-walled cylinders given in Timoshenko's "Strength of Materials" *(1)*. The general case is illustrated by Fig. 2 which shows two hollow cylinders, the outer shrunk onto the inner with an interference fit. The symbols used in the formula apply as described below:

$$p = \frac{E\,\delta}{b}\,\frac{(b^2 - a^2)\;\;(c^2 - b^2)}{2b^2\,(c^2 - a^2)}$$

a = Internal radius of cylinder I
b = Nominal external radius of cylinder I
b = Nominal internal radius of cylinder II
c = External radius of cylinder II
p = Contact pressures between cylinders I and II
E = Modulus of elasticity (Steel = 30 . 10^6)
δ = Amount the external radius of cylinder I is bigger than the internal radius of cylinder II

In the case of a hub, or specifically the inner ring of bearing being mounted on a solid shaft, a=O and the formula is greatly simplified:

$$p = \frac{E\,\delta}{2b}\left\{\;1 - \left(\frac{b}{c}\right)^2\right\}$$

The ratio δ/b is dimensionless, and numerically equal to the interference per unit of shaft diameter (thousandths of inches per inch).

Parts with Mating Tapers

The experimental design indicated (Fig. 3) employs the inner ring of a spherical roller bearing weighing complete 1,450 pound and having a 34¼ inch O.D. This test setup was made extra large intentionally so as to answer effectively the skeptics who might initially question whether the oil injection method will work with large pieces as well as the small ones usually used for convenience in testing. The tapered bore inner ring is mounted directly on a tapered seat that has the bearing industry's standard 1:12 taper on the diameter.

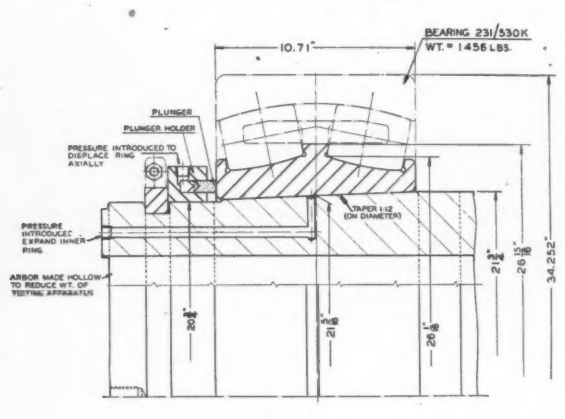


Fig. 3
Arrangement of Tapered Bore Ring for Dismounting by Oil Injection.

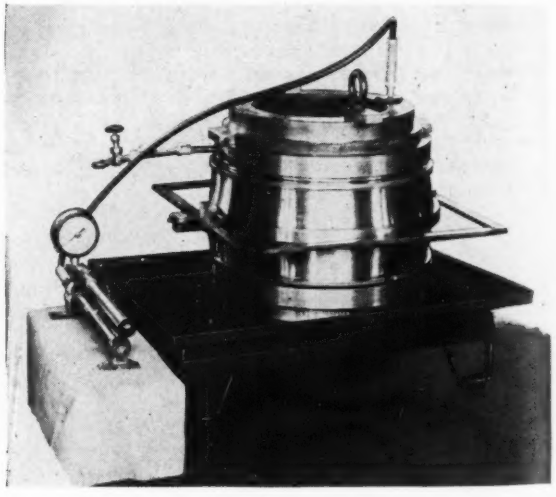


Fig. 4
Test Set-up of Arrangement for Dismounting Tapered Bore Ring by Oil Injection.

A bearing inner ring, such as in Fig. 3, requires the exercise of some judgment in the selection of values for b and c when using these values for the calculation of contact pressure "p". Because of the irregular shape of the OD and the tapered bore, it has been found practical and convenient to select the diameters at the base of the center flange and the center of the bore as values for b and c respectively. When oil is first introduced into the hydraulic ram to displace the inner ring axially up the taper, and a pressure of 2,800 p.s.i. is developed, the 44 sq. in. of working area develops an axial push of 123,000 pounds. This rather substantial force is sufficient to expand the bearing ring only 0.0024 inch. When, in addition, oil is introduced into the bore at 3,300 p.s.i. the outside diameter of the center flange of the ring is further expanded to a total of 0.010 inch.

The picture (Fig. 4) shows the actual test setup made in accordance with design (Fig. 3). The pump in the left foreground feeds oil to the ring bore and the pipe line (with hand valve) in the left background leads from another pump to the piston used to push the ring up the taper. The rectangular bar frame supported on the center flange of the inner ring carries an indicator to measure the ring expansion. The outside diameter expansion of the center flange so measured is mathematically related to the interference fit that exists at the bore, and, by micrometer measurement an interference fit can be measured and controlled to a predetermined value. The formula expressing this relations is:

$$\text{Increase in outside diameter} = \frac{2\delta b}{c}$$

If one analyzes (Fig. 3) with the aid of the two formulas that have been referred to, it can be seen how well theory and practice check with one another. Before calculating the theoretical contact pressure the interference between ring bore and journal must first be determined. This can be done with the formula just given as it is known the increase in outside diameter was observed to be 0.010 inch.

$$0.010 = \frac{2\,\delta\left(\frac{21.313}{2}\right)}{\left(\frac{26.938}{2}\right)}$$

$$\delta = \left(\frac{26.938}{21.313}\right)\left(\frac{0.010}{2}\right) = 0.0063 \text{ inch}$$

When estimating the contact pressure for comparison to observe values in a case (Fig. 3), an allowance should be made for the oil film thickness. The inner ring must be expanded to allow for the oil film and this in turn affects the axial force required to push the ring into position. From measurements, which will be referred to later, an oil film thickness of 0.001 inch is a reasonable value. Accordingly, calculation for contact pressure "p" is:

$$p = \frac{E\delta}{2b}\left\{1-\left(\frac{b}{c}\right)^2\right\}$$

$$p = \frac{(30\cdot 10^6)\ (.0063+.001)}{2\left(\frac{(21.313)}{2}\right)}\left\{1-\left(\frac{\frac{21.313}{2}}{\frac{26.063}{2}}\right)^2\right\}$$

$$= \frac{(30{,}000)\ (7.3)\ (1-0.67)}{21.313}$$

$$= 3{,}380 \text{ p.s.i.}$$

It should be noted that the assigned values for b differed in the above calculation from the one made to obtain the interference fit at the bore. The observed interference was by means of an indicater, applied to a particular location, while in the calculation of contact pressure dimension b is indicative of ring section and resistance to elastic deformation.

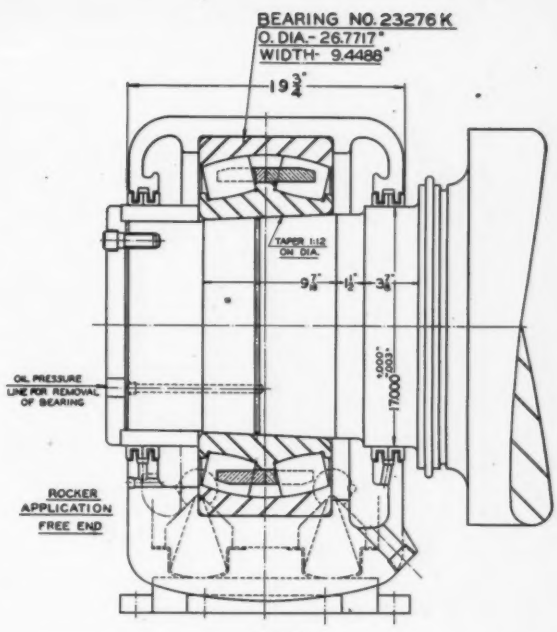


Fig. 5
100" Calender Bottom Roll Bearing Application Provided with SKF Rockers and Hydraulic Mounting.

When hydraulic pressure exists between a tapered bore piece and its mating tapered journal, there is a component axial force tending to push the outer piece down the taper. The magnitude of this force is equal to the axial projection of the area of journal contact, times the average pressure across the entire length of contact. With a maximum pressure as high as 3,500 p.s.i. a value of 3250 p.s.i. as an average is quite reasonable. The "downhill" axial component is calculated to be 99,000 pounds and this compares with the exerted "uphill" force of 123,000 pounds. In spite of the handicap of having to estimate the values for an irregular section

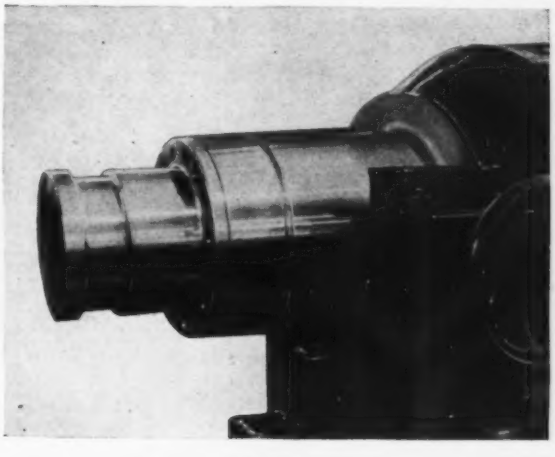


Fig. 6
232" Wide Supercalender Top Roll Equipped for Hydraulic Mounting of Bearings.

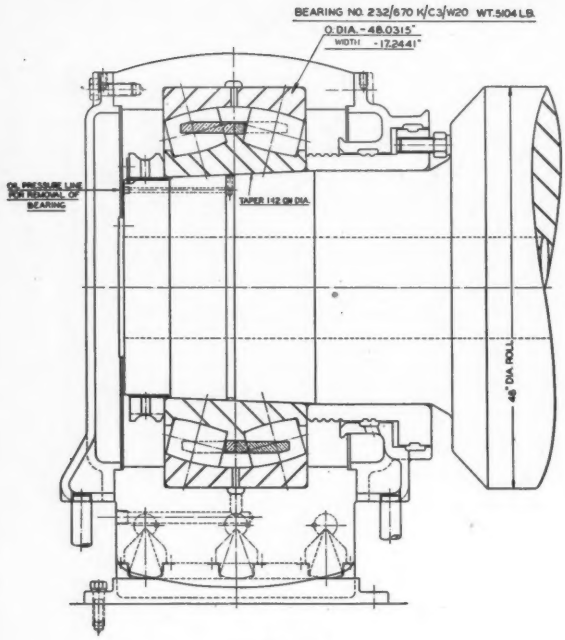

BEARING NO. 232/670 K/C3/W20 WT.5104 LB.
O.DIA. - 48.0315"
WIDTH - 17.2441"
OIL PRESSURE LINE FOR REMOVAL OF BEARING
TAPER 1:12 ON DIA.
46" DIA ROLL

Fig. 7
232" Wide Supercalender Bottom Roll Bearing Application Provided with Rockers and Hydraulic Mounting.

that is the equivalent of a uniform rectangle, experience has indicated that the observed axial displacing force is consistently 120 to 130% of the calculated value.

When dismounting a tapered bore piece from its seat, pressure is applied to the bore only and generally results in the piece being freed from the tapered seat so completely and uniformly that it becomes desirable to provide a safety stop to prevent possible injury to people and damage to equipment from overtravel, particularly when the axis is horizontal. The assembly (Fig. 4) has the small end of the taper pointing upwards and weighs approximately 1,400 pounds. When the inner ring is dismounted by the oil injection method, the energy liberated as the result of the sudden return of the inner ring to a free condition, after having been elastically strained, is enough to make the whole assembly jump into the air. A close scrutiny of (Fig. 4) will show that in the upper foreground a projecting lug under the I bolt has been provided as a safety precaution.

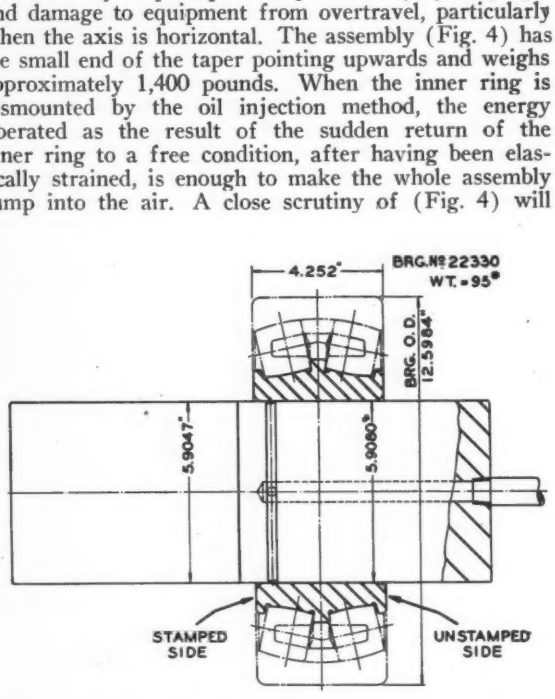


Fig. 8
Arrangement of Cylindrical Bore Ring for Dismounting by Oil Injection.

Actual Installations Equipped for Oil Injection

The oil injection removal method has already been put into practice. The bottom roll of a calender bearing mounting (Fig. 5) is typical of its ease of application and lack of conflict with other mechanical features. As a matter of fact, this particular detail was, so to speak, added to a design at the last minute and promptly proved useful. In the process of assembling a calender, the erection crew drove one of the bottom roll bearings too far up the taper. The assembly was being made without oil to reduce the friction and the bearing had been very firmly seated after considerable effort, and then inspection revealed that too much of its internal clearance had been removed. Instead of the situation being a very delaying mistake, the oil injection method quickly dismounted the bearing—to the surprise of those present. The bearing not only came off, but overtravelled considerably because of the horizontal axis and the lack of any safety stop.

The bearing seat in the picture (Fig. 6) plainly shows one of the oil grooves that is provided for hydraulically mounting and dismounting the top and the bottom roll bearings of a new 232-inch wide supercalender. The top roll pictured was unfinished at the time of photographing, and is shown seated on the steady rests of a Midvale Company grinder. The details of the roll mountings are similar to the cross section (Fig. 7) of the bottom bearing application. The two spherical roller bearings for the top roll locations each weigh 2700 pounds and the two for the bottom location weigh 5100 pounds a piece. It is evident that size is no limitation on the ability to mount and dismount bearings hydraulically. As a matter of actual fact, the larger the bearing, the greater the advantage of the oil injection method for mounting and dismounting tapered bore bearings. It has been estimated that an axial force of almost 500,000 pounds will be required to push the bottom roll bearings up their tapered seats while the inner rings are kept expanded by oil pressure introduced through the journals. This is quite easy by making the proper provisions which would include an hydraulic ram installation, at least in principle, the same as indicated in the model (Fig. 3).

The installation designs (Figs. 5 and 6) show the simple provision required for the oil injection method of mounting and dismounting bearings. The paper industry's wide use of tapered bore bearing mountings makes it possible for them by adding the necessary oil holes and grooves, to take as full advantage of this method as though the equipment was originally so equipped.

Parts with Cylindrical Contact Surfaces

While this hydraulic method is most effective when used with parts having mating tapers, it is of great help in dismounting bearings with cylindrical bores. Another laboratory model (Fig. 8) is a solid arbor onto which the inner ring of a bearing has been shrunk with an actual measured interference of 0.0028 inch. With this interference and the dimensions indicated (Fig. 8), the contact pressure can be calculated according to the formula which gives a value of 3,550 p.s.i. When it (Fig. 8) is actually connected for the introduction of high pressure oil (Fig. 9) and an adequate pressure is built up, the separation of parts is usually so complete that the dead weight of the bearing itself will displace the bearing a distance greater than the width

of the bearing and uncovers the oil port by at least an inch.

A study (Fig. 8) will show that the oil port is much closer to one side of the straight bore bearing. This is an important detail and the off-center position of the port should be in the same direction as the motion when stripping a bearing from its seat. As noted in the preceding paragraph, the race (Fig. 8) uncovers the oil outlet by about an inch, and then stops because of a rupture of the oil film that can no longer be maintained by the pump.

Usually the straight bore bearing will not come completely off its seat because an oil film cannot be sustained by too small an area regardless of the location of the port. Accordingly, the bearing hangs on the edge and we have used the press (Fig. 9) to measure the force for final removal. It has varied between 5,000 and 12,000 pounds and is usually about 9,000. When the bearing is removed as in the past by pressing or pulling, the initial starting resistance varies between 50,000 and 60,000 pounds. It is obviously a great help to have to pull only a distance of ½ inch instead of 4 inches with an effort of only 16% rather than 100%, and this labor saving is accomplished through the use of oil injection.

With further reference to the location of the oil port it is already evident from the successful dismounting with an off-center outlet that the sealing by end effect, as discussed previously (Fig. 1), is an actuality. Outside diameter measurements of the ring's two outer flanges and one central guide flange with the oil port both off and on center, give added corroboration to the reality of this so-called end effect. Using the testing arrangement (Figs. 8 and 9) the resultant measurements of the outside diameter expansion indicate very clearly the pressure drop at various axial locations and the usefulness of the end effect in helping to build up pressure in the bore from side to side before permitting escape past the edges.

The case of extreme off-center location of the oil port (Fig. 10) shows how the unstamped side expanded, but the end effect sealed this same side until the pressure developed to expand the center and the stamped side flanges. It was not until the oil had traveled through the bore for a distance of 3 inches, to establish a complete oil film between the bore and the bearing seat, that the edge only 9/16 inch away lifted.

In the preceding calculation invoiving the tapered bore bearing 231/530 K (Fig. 3) the statement was made that there would be a subsequent discussion as to why the oil film thickness of 0.001 inch was chosen

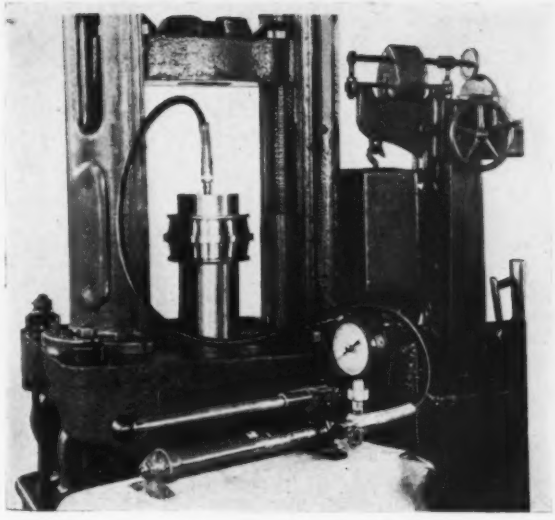


Fig. 9
Test Set-up of Arrangement for Dismounting Cylindrical Bore Ring by Oil Injection.

when estimating the total radial interference between tapered bore and tapered arbor. A study of the data (Fig. 10) indicates that the maximum oil film thickness at the port is in excess of 0.001 inch, as shown by the maximum diametral ring expansion of more than 0.002 inch.

SKF Rigid Coupling

At the beginning of this paper it was stated that this principle was developed to make more attractive the supporting of marine shafting by roller bearings. Because the principle of the coupling may be varied widely to adapt it to different applications, it may also be of interest to those who are interested in the oil injection method for mounting and dismounting roller bearings. One of the principal attributes of plain bearings was that they permitted the use of couplings forged integral at the end of each section of shafting; the new rigid coupling overcomes the objection to the older removable types. The troubles of the previous designs stemmed from the difficulties encountered in fitting, assembling, and maintaining the keys, keyways and drive fits.

The coupling (Fig. 11) depends upon pressure only and unites two purely cylindrical shaft ends without the use of keys or any similar device. The clean lines

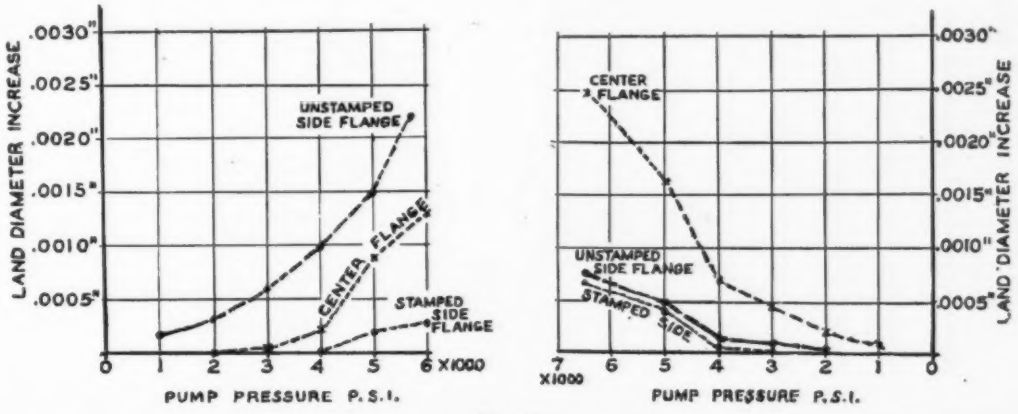


Fig. 10

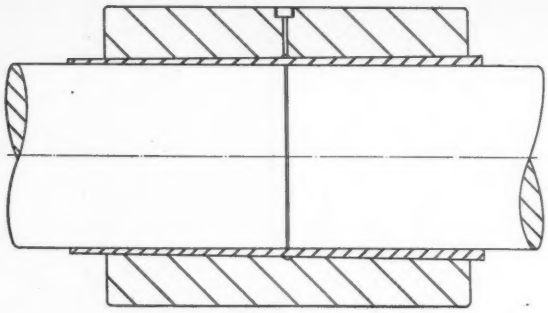


Fig. 11
Rigid Coupling for Marine Shafting.

of the coupling make any guard quite unnecessary and the couplings are so dimensioned that they can transmit torque up to the point where ordinary shafting passes through the yield point and takes a permanent set. During the early part of 1944 the first couplings were installed and they have been followed into service by more than one hundred additional units. The shafts so coupled now range from 5½ to 18 inches in diameter.

Twenty-four rigid couplings have just been completed for use in six new twin-screw ships. A 1200-hp. Diesel engine drives each lineshaft at 300 r.p.m. when the ships are running at a top speed of 13½ knots. Spherical roller bearings have also been selected to support the lineshafts. To couple the 7⅜-inch diameter shafting, the outside diameters of the outer coupling sleeves will be expanded approximately 0.013 inch. One of these couplings (Fig. 12) is shown being assembled by hydraulic mounting tools. The left foreground pump delivers oil up to 10,000 p.s.i. to two (2) 20-ton rams located 180° apart. The right foreground pump delivers oil at 25,000 to 30,000 p.s.i. to expand the outer sleeve of the coupling during mounting. The rams and one pump are completely standard commercial units, while the pump for pressures up to 30,000 p.s.i. has been modified to receive a piston one-half the standard diameter. The coupling is mounted by rams exerting a pull on the outer sleeve through four draw bolts, and reacting against the collars contacting the large end of the inner sleeve. The two collars at each end of the rams are both split into 180° segments and the splits timed to occur at 90° from each other. With the pictured arrangement, the cycle time to mount and then dismount a coupling is less than 10 minutes, including the time it takes to check the expansion of the outer sleeve at three separate stages of progress.

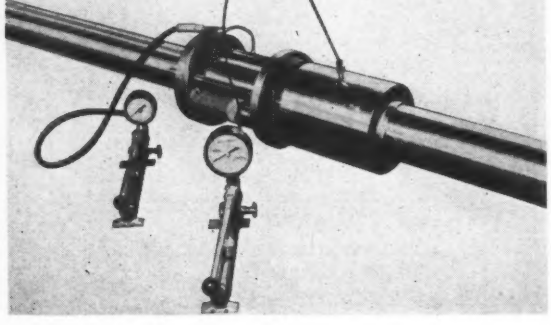


Fig. 12
Mounting of One of 24 Rigid Couplings for 7⅜" Shafting, Using Hydraulic Assembly Tools.

Conclusion

Many variations of the details discussed have been tried during the relatively brief period actual experience has been accumulated with this method of making and breaking heavy interference fits. For their particular use many of the variations not mentioned are equally important and successful. In presenting this paper the author has tried to accomplish two things: First, to give a sense of proportion on this subject; and secondly, to create a feeling of confidence in the possibilities of this hydraulic method as the result of a review of factual data.

Literature Cited

1. Timoshenko, S., "Strength of Materials," Second Edition, Part II, Chapter 5. New York City, D. VanNostrand Co., Inc., 1941.

TAPPI Notes

Myron F. Flotow, formerly of the Paper Corporation of America, is now assistant manager of production for the Central Paper Company, Muskegon, Mich.

Murrell G. Selden is now research assistant for the Brown Island Mills, Albermarle Paper Company, Richmond, Virginia.

The Casein Company of America and the Durite Plastics Division will hereafter be known as the Borden Company, Chemical Division.

Frederic S. Klein is now mill manager of the Byron Weston Company, Dalton, Mass.

Alefandro Perez, formerly of the Canada Paper Company, is now associate engineer for C I Y A, Trupan, Chile.

Paul R. Anderson, formerly of the Bryant Paper Company Division, is now chemist for the St. Regis Company, Deferiet, N. Y.

Martin Jaffe, formerly of the National Paper Products Division, is now research chemist for the Crown Zellerbach Corporation, Camas, Washington.

Eugene G. Ingalls, vice-president and manager of the Wausau Paper Mills Company, Brokaw, Wisconsin, representative in that company.
has succeeded R. Tourangeau as TAPPI Corporate

Norman S. Eppel, formerly of the Frozen Food Foundation, Inc., is now technologist, Subsistance Branch, Container Development Division, Quartermaster Food and Container Institute, 1849 W. Pershing Road, Chicago 9, Ill.

Robert I. Webber, formerly of Webber & Smith is now the owner of Robert I. Webber Company, 52 Vanderbilt Ave., New York 17, N. Y.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Leo Cahn, Research Chemist, Consolidated Lithographing Co., Brooklyn, New York, a 1925 graduate of the University of Frankfurt am Main, with an Sc.D. degree.

Robert G. Capell, Fellow, Mellon Institute, Pittsburgh, Pennsylvania, a 1946 graduate of Columbia University with an M. S. degree.

Nirmal Ch. Chakraborty, Chief Paper Supervisor, India Paper Pulp Co. Ltd., Naihati, West Bengal, India, a graduate of Bengabasi College, Calcutta.

Elmer E. Daggy, Technical Sales Service Representative, Corn Products Sales Co., South Boston, Massachusetts, a 1941 graduate of Purdue University.

Daniel S. Dieffenderfer, Paper Supervisor, Individual Drinking Cup Co., Easton, Pennsylvania, a 1947 graduate of Lafayette College.

Training for the Pulp and Paper Industry—The Graduate Level*

By Harry F. Lewis[1]

Abstract

An outline of the facilities for graduate training for the pulp and paper industry is given with emphasis on the activities of The Institute of Paper Chemistry.

The pulp and paper industry is one industry blessed with a training program covering the entire gamut of technical needs. Furthermore, it is one industry in which the formal training is supplemented by an extensive coverage of the technical literature, including the volumes of *The Manufacture of Pulp and Paper*, the *Technical Association Papers*, the Technical Section of the *Paper Trade Journal*, the new TAPPI technical publication announced by Mr. Gillespie, the TAPPI annual *Bibliographies of Paper Making* and their Decennial volumes, the book of TAPPI Standard Methods under constant study and revision, and the TAPPI monographs which cover specific areas in greater detail than can be done in *The Manufacture of Pulp and Paper*. Many excellent new reference books are also available to the pulp and paper technologists in the fields of wood chemistry, cellulose chemistry, and in the applied areas. In addition, the technical man in the mills belonging to The Institute of Paper Chemistry has the Library Notes of the Institute, its quarterly Research Bulletin, and about 170 annotated bibliographies covering rather completely certain fields of pulp and paper. Members of the American Paper and Pulp Association receive instrumentation reports, microbiological reports, etc. Other technical and semitechnical journals supplement the above so as to provide a complete picture of the operations of the industry. Truly it can be said that the pulp and paper technologist who cares to can improve himself in almost any field by reading the material available to him.

Graduate Courses

Technical training on the graduate level for the pulp and paper industry follows three general courses. The first is the type of work given in the Department of Chemical Engineering, School of Chemical Engineering Practice of the Massachusetts Institute of Technology. In this course a selected group of graduate students who have had at least four years of undergraduate study at M.I.T. or elsewhere put in six months at three field stations located at Bangor, Maine, Parlin, New Jersey, and Buffalo, New York The station located at Bangor deals with the operations of the pulp and paper industry. Here the students study "the application of engineering theory to practice and the cultivation of resourcefulness and effectiveness in co-operative effort under industrial conditions." Tests are run on industrial equipment, and investigations are carried out by the students in the plant on a phase of one of the unit processes or on a chemical problem. Training of this type provides an opportunity to compare laboratory findings with plant findings, operating under practical working conditions. It also makes it possible to carry work from laboratory scale at M.I.T. to a commercial scale. For graduates of M.I.T., this program normally requires one year of academic work. For graduates in chemical engineering of other institutions, it is generally necessary to take an additional term over the one academic year.

The second relates to university graduate work leading to the M.S. and Ph.D. degrees where it is possible to carry on major work in the fields of cellulose and lignin chemistry or on a problem more closely allied to pulp and papermaking. An outstanding illustration of work of this type will be found at McGill University where for years Dr. Hibbert and Dr. Maass and now Dr. Purves have been carrying on work in the organic chemistry and physical chemistry of cellulose, lignin, and similar materials. This particular type of training gives a fine preparation for fundamental research in these fields. Similar opportunities are provided at the University of Washington under Dr. McCarthy. Under Dr. White's leadership at Idaho, courses and research leading to the Master's degree are available, with particular emphasis on the carbohydrates in wood. Similar opportunities exist at the University of Maine on problems closely related to pulp and papermaking. One of the most extensive programs in this category is given at The New York State College of Forestry. Dr. Jahn reports "the graduate training follows the conventional academic pattern. We have two degrees, the M.S. and the Ph.D. The purpose of the graduate work is to train men for research. For the Master's Degree a minimum of 12 hours of course work plus a thesis equivalent to 18 credit hours is required. Considerable emphasis, therefore, is placed on the thesis. The thesis work for the M.S. Degree may be along purely fundamental lines in cellulose or wood chemistry or may be in the nature of an applied research problem directly connected with some phase of pulp and papermaking. Most of the students who plan to go into the pulp and paper industry take a problem of the latter type, as for example The Sizing and Properties of the Silicones, or The Effect of Starch in Coating Formulae on the Properties of Paper, etc. Men who plan to go into the cellulose derivatives industries, the plastics industry, or continue in fundamental research are given problems dealing with the chemistry of cellulose or wood.

"Candidates for the Ph.D. must not only meet all the graduate requirements for that degree at the College of Forestry but also meet all the requirements of the Department of Chemistry at Syracuse University. That is, our Ph.D. men must take the full chemistry course requirements and the comprehensive examinations in Chemistry given by Department of Chemistry as well as our own examinations and course requirements. The Ph.D. student must complete a research project along fundamental lines in cellulose, lignin or wood chemistry.

"The facilities for graduate research at The New York State College of Forestry include a complete pulp

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Member TAPPI; Dean, The Institute of Paper Chemistry, Appleton, Wis.

and paper pilot plant, a series of small research laboratories equipped for graduate research, a plastics research laboratory and a complete X-ray laboratory."*

A still different approach to the problem is represented by the curriculum of The Institute of Paper Chemistry. The course at the Institute is open to a limited number of graduates in chemistry and chemical engineering from our colleges and universities. In general, the recommendations of the American Chemical Society and the American Institute of Chemical Engineers are followed in evaluating the quality of undergraduate preparation although there are certain exceptions to this principle. Inasmuch as the author is familiar with the program of The Institute of Paper Chemistry, he proposes to discuss this training program in some detail.

The Institute of Paper Chemistry

The Institute of Paper Chemistry was organized and is financed by a substantial section of the industry it serves, together with help from allied industry. This may truly be called a co-operative educational venture on a very large scale. About 100 corporations, producing better than 70% of the tonnage of all grades of the industry, are The Institute of Paper Chemistry. Furthermore, the way is open for any nonmember to become a member. This is quite a step from those days back in 1929—two weeks after the stock market crash to be precise—when nineteen mills in the State of Wisconsin formed and incorporated The Institute of Paper Chemistry as a nonprofit educational institution. The Institute today is truly national in scope. Not only is its membership spread in all the papermaking areas, but its student body has come from 35 states and from 89 colleges and universities.

The Institute admitted its first class of two regular students and one special student in February of 1930. Dr. Kress, the original and only technical director throughout the years, provided the instruction in pulping, papermaking, and allied fields; five men from the Lawrence faculty were responsible for the courses in chemistry, physics, wood technology, and German. Miss Roseth (now Mrs. Jayme at Darmstadt) presided over over the beginnings of the Institute library and started the Library Notes. The author came in two months later to teach some of the fundamental courses in chemistry, to stir up interest among college and university seniors in the paper industry and particularly in the Institute, and to help shape curriculum and establish standards.

The first laboratory was set up in room provided in the Alexander Gymnasium of Lawrence College (so called for Mr. Alexander, President of the Nekoosa-Edwards Paper Company and longtime friend of the college). The first laboratory furniture was made in Appleton and the early pipefitting was done by staff (Kress) and students (Harold Bialkowsky and Roy Davis) with some help from the Lawrence College plumber. It was a highly personalized form of education and a highly successful one—successful because the teacher had the knowledge and the skill in passing it on to students who had the desire to learn. Never were there two more co-operative guinea pigs than Bialkowsky and Davis, nor a more inspiring leader than Kress. Innocent salesmen who came to sell their product were in turn sold on the new school and became its boosters (and suppliers of equipment).

Time will not permit a discussion of the building years—building staff, building curriculum, building library, building knowledge and experience, and building buildings. It has been a glorious adventure on the part of those privileged to participate from the beginning. As of today the staff numbers 182. Today there are buildings and equipment costing originally about $1,500,000; in today's market they greatly exceed that. There is equipment for research in a number of fields of chemistry, physics, and biology. The pulp and paper laboratories for researches in these fields are completely equipped, including one building devoted solely to research in the container field. A library building houses the library and editorial offices. For student housing, the Institute owns one large home for single students, leases two apartment buildings from Lawrence College for married students, and has a Quonset colony of fifteen apartments, also for married students.

Since the paper industry operates in all parts of the country, it was believed to be incumbent on us to draw the student body from the four quarters. In the early years, students had to be sold both on the industry and the Institute. The first two or three years were the hardest—although the depression certainly made it easier, for back in 1931, 1932, and 1933, there were many seniors graduating but precious few jobs. Altogether since 1930, 267 men have matriculated; thousands were told about the industry, and it is not uncommon today to meet technical men in the chemical industry all over the country who had first been told the story of pulp and paper by a representative of the Institute. Visits are made annually to 65 to 90 colleges and universities personal interviews are with from 5 to 15 men in each school and now and then student and stag groups are on some phase of pulp and paper. So that's part of the education program—purely on an extracurricular basis.

Of the men who matriculated, 91 or 34% have completed the course; 43 are presently students at the Institute. Besides the 91 Ph.D.'s (which include 5 to be conferred next June), 133 M.S. Degrees have been awarded. From the class entering in 1936 until the academic program was interrupted in 1943 by the war, better than two thirds of the students matriculating have completed the course. Postwar experience leads to the belief that this can be equaled or better.

The present day course of study has come up through a process of evolution. The fundamental structure of the original curriculum of The Institute of Paper Chemistry was based up on a combination of educational and industrial experience. Always true to its original pattern, it has been enlarged and strengthened through the contributions of an expanding program of fundamental research and as additional trained manpower has become available.

The experiences of Institute graduates in the pulp and paper industry have established the validity of the program. Two clinics with Institute graduates were held during the summer of 1944 for the purpose of relating the academic training of the graduates with their industrial responsibilities. As the result of the experiences of staff and students, the curriculum has recently been re-examined and modified in line with the changing emphasis of the industry.

In its modified form, the curriculum recognizes not only the importance of a broad and thorough scientific training oriented towards fields related to the industry but also the necessity for the growth of the individual student to the fullest extent of his capabilities. With so many Institute graduates in the audience, it seems best to leave out any reference to the goal of the training program. They are expected to be men of independent thought, resourceful, with sound judgment and vision, and capable of aggressive and creative leadership.

* Private communication from E. C. Jahn, February 20, 1948.

Instruction

The author will briefly review the contents of the curriculum.

First Year

The first year of the curriculum is devoted entirely to the fundamental sciences. The program is comprehensive and basic. Approximately two thirds of the course time is assigned to the field of chemistry and one third to physics. In addition, a course in Statistical Analysis is included. An instructor is available in German for those students whose undergraduate preparation in German has been inadequate; he is responsible for accrediting the student in German, and the responsibility for scheduling the work with the instructor is entirely in the hands of the student. Lectures and laboratory work have been reduced to an essential minimum; the student is expected to seek most of his knowledge in the original literature and to relate this to the information and experience gained in the lecture room and the laboratory.

Second Year

The purpose of the second year curriculum is to teach the student the fundamental principles involved in the various pulping, papermaking, and converting processes.

In order to accomplish this, the program is designed to familiarize the student with these processes and with their techniques and variables, to teach him the principles involved and to correlate and integrate this knowledge with the basic scientific knowledge acquired during the first year curriculum and during previous scientific training. These objectives are accomplished by means of round table discussions, seminars, and descriptive lectures; by demonstrations, exercises, and experimental projects in the laboratory and pilot plant; and by mill visits and mill experience.

In the classroom work, the trend is away from formal lectures with considerably increased emphasis on the seminar and round table discussion type of presentation involving, in most cases, a group of faculty members drawn from both the fundamental and applied research staffs. In many cases, the faculty members from the fundamental research staff are those who taught these same students some of their basic courses during the first year of the curriculum. This facilitates an effective integration of theory and practice in the various industrial processes.

A fair amount of laboratory work is required of the student during this year in order that he may become sufficiently familiar with the industrial processes to be moderately proficient in the techniques involved and, therefore, able to conduct research in these fields, and to have acquired sufficient appreciation of the problems involved to provide a background for possible future supervision of such research. Much of the laboratory work is carried out in the pilot plant in which the commercial operations are duplicated on a relatively small scale. The laboratory work is so planned that there is an absolute minimum of routine exercises. The laboratory projects are designed to develop new information in the field being studied and, although a certain proficiency in laboratory technique is required, its acquisition is incidental to the successful prosecution of small-scale research projects of limited scope. Wherever possible, and particularly in the case of chemical engineering and paper-machine operation, a certain amount of the laboratory work is carried out in the environment of a commercial pulp and paper mill. The proposed semi-commercial plant at the Institute will provide a valuable addition to the laboratory facilities available to the students in connection with the second year curriculum. Practical operating aspects and economic considerations are stressed at all times, as well as the scientific aspects.

The mill visits made in connection with the second year curriculum are so chosen and carried out as to give the students a rather thorough insight into the various full-scale operations. Wherever possible, round table discussions are held at the mill with qualified technical and operating personnel to give the student an opportunity to discuss the principles of the various operations with the mill people and to acquire a further appreciation of the practical and economic aspects of industrial problems.

Third Year

An important change in the academic program of The Institute of Paper Chemistry took place in September, 1947 with the introduction of the new third year course. This is intended to provide experience for the student in planning an intelligent approach to research and to give the faculty an improved means for evaluating the student's capacity of achievement prior to admission to doctoral work. The program serves as a break between the actual course work of the institute and research. The successful completion by the student of the program will qualify him for doctorate research. The program, therefore, replaces the older qualifying examinations. The new course presents a series of broad, difficult problems and several series of colloquia in fields that are basic to the prosecution and utilization of research. The thread of events for each individual student throughout the third year is about as follows:

He will attend colloquia which are both scheduled and unscheduled; some of these, by their nature, will be initiated during the opening weeks of the year with lectures in the traditional manner. However, as the name implies, each colloquium will be informal, discussional, conversational. The several series of colloquia are designed to give each student training and experience in the areas which are felt to be vital to the successful initiation, prosecution, and utilization of research relating to the pulp and paper industry. These areas are: bibliography, organization and writing of reports, verbal presentation of technical material, discussion with outstanding research specialists invited from industry and institutions of higher learning, instrumentation and the physical tools of research, statistics, the economics of the pulp and paper industry, and patents and other legal aspects of research. During the course of the year each student will attack a minimum of five problems which will be assigned and supervised by various problem committees. The last problem will be elective and may become the subject of the student's doctoral thesis. Theoretically, any one of the problems could become the thesis subject. An economics problem will also be given during the third year, extending over a substantial portion of the year. In exceptional cases, the faculty may become convinced that a student has amply demonstrated a high level of competence and research ability before the conclusion of the year and recommend that the student be admitted to candidacy for the doctorate without further delay. The student will be assigned his first problem during the second or third week of the year. He will then proceed independently, working on a schedule of his own choice. It will be understood that he is not expected to obtain solutions to the problems; however, he will be expected to lay the ground work and do all the planning that is required to the point of actual research work for one or more approaches to the problem. This

material will be presented to the problem committee as a written report, after which the student will give a verbal presentation of his material. The problems will be assigned consecutively, so arranged that the students will have at least two different problems under consideration at all times. During the course of the year, the student will come in contact with five different problem committees in connection with five broad problems centering roughly over as many different scientific and technical fields.

In carrying out the assignment, the student will analyze the problem, ascertain the areas of research and experience which are obviously or potentially related to the problem, and study the literature in those areas. He will prepare a bibliography and critically evaluate the literature which he has read. Following a period of careful thought, he will develop at least one or, it is hoped, two or three avenues of approach to further analysis of the problem. In this critical phase of the work, independence of action, originality, ingenuity, boldness, objectivity, and intellectual growth will be rated high. Having formulated one or more approaches to the problem, the student will then, in normal situations, plan his scientific and technical equipment and facilities in the manner of a person who is planning actual investigative work. This planning might well involve consultation with experts on the staff, or elsewhere, again not with the motive of acquiring key ideas but for the purpose of discussing technical details relating to unusual equipment and techniques or for the clarification of the theory of specialized methods of measurement. The student should have more than a superficial knowledge of the scientific methods which he would employ in his attack on the problem. Accordingly, he wil find it necessary to obtain an appropriate theoretical background through study of scientific works and papers. The student cannot, of course, anticipate the kind of data which he would obtain if he were actually to perform the investigative work. However, he should have developed some fairly clear ideas as to why he would perform the experiments and observations suggested in his report. The discussion of these ideas will obviously be a very important part of this report.

The colloquia listed should provide the student with training and experiences which will be of great value to him in his later problems.

FOURTH YEAR

After the student has been placed on the list of accepted candidates for the degree of Doctor of Philosophy, he is free to devote his entire time to research. The topic for such research may be the subject of the optional problem selected by the student in the course of his third year's work, it may be a subject proposed by the student independently, or one selected from a list of problems prepared by the Thesis Committee of the Institute. No fixed time is set for the completion of the thesis; in general, it is expected that at least a year of full time laboratory work will be the minimum needed to achieve the goal set. Scholarship appointments will be extended beyond this period to any reasonable degree upon the recommendation of the Thesis Advisory Committee. When the thesis has been finally accepted and the oral examination in defense of the thesis passed, the candidate is recommended to the Board of Trustees of Lawrence College by the faculty of The Institute of Paper Chemistry for the degree of Doctor of Philosophy.

The Doctoral theses over the years have covered a wide range of subjects in the fields dealing with the fundamental physical and chemical components of fibrous raw materials and their relation to pulp and paper processes, with fundamental studies of the various phases involved in the preparation of stock for the machine—such as sizing, coloring, beating, and hydration—sheet formation and the effect of flocculating and deflocculating agents, and the nature of the components and processes involved in coating, and measurements of the finished sheet in terms of permanence, color stability, strength, and use requirements. Specific studies have been made on cellulose, the hemicelluloses, and lignin, and the derivatives of these materials which might arise from either a pulping or a bleaching process. More recently ultraviolet and infrared spectroscopy have been applied to structural studies.

In closing, the author should like to point out what an unusual experience The Institute of Paper Chemistry has provided for the older members of its staff and for him in particular. We have had the chance to plan, observe, and direct the evolving program of education and research and, it is hoped, to grow with it. We have worked together in an atmosphere free from the restrictions imposed by traditions and the limiting experiences of faculty members of limited vision. We have had to consider only one thing as we approached a curricular change, and that was whether such a change would improve the educational experience of a student in terms of his future professional responsibilities. With small classes and a large faculty: student ratio, we have been able to test new educational approaches and to keep the good and discard the poor. Being close to the user of our product, we have been quicker to sense changing conditions and to apply corrective measures. We are not training chemists or physicists, biologists or economists; rather we are attempting to turn out men who possess both breadth and depth in the basic sciences and technologies of our industry and who have a deep understanding of the fundamentals and experience in applying these fundamentals to the processes and problems of the industry. We have sought to provide a broad view of the field, but at the same time we have not neglected the roots which yield sustenance to the industry. How well we have done this, time alone will tell.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has just elected the following to membership:

Lawrence C. Crowder, Plant Engineer, Calcasieu Paper Co., Inc., Elizabeth, Louisiana, a 1934 graduate of Southwestern Louisiana Institute.

Lawrence B. Hawes, Jr., Sales Engineer, Mason-Neilan Regulator Co., Boston, Massachusetts, a 1942 graduate of Pennsylvania State College.

Harry F. Kohne, Jr., Project Leader, West Virginia Pulp and Paper Co., Luke, Maryland, a 1943 graduate of Johns Hopkins University.

Colin C. Macdonell, 3105 Van Horne Ave., Montreal, P.Q., Canada.

Theophile S. Markov, Chief Chemist, San Joaquin Div., Fibreboard Products, Inc., Antioch, California, a 1937 graduate of the University of Washington.

Frederick B. Schelhorn, Chemical Engineer, Brown Company, Berlin, New Hampshire, a 1939 graduate of the University of Pennsylvania, with a Ph.D. degree from the Institute of Paper Chemistry in 1943.

William P. Shannon, Paper Mill Tour Foreman, Macon Kraft Co., Macon, Georgia.